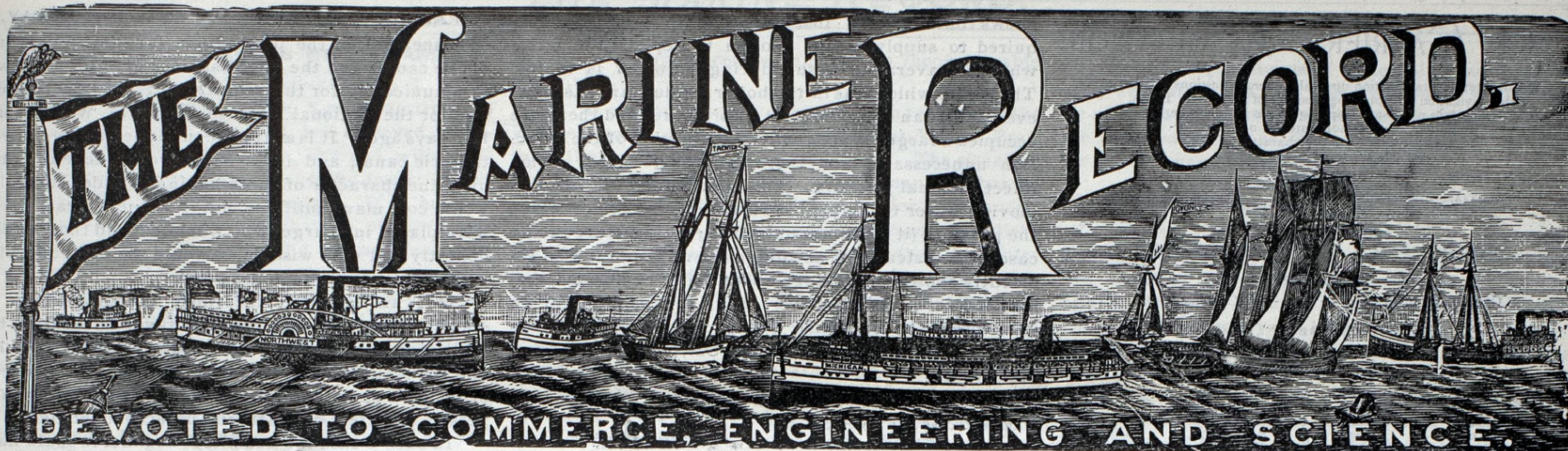




\$2.00 PER YEAR.

ESTABLISHED 1878.

10c. SINGLE COPY.

VOL. XVIII.

CLEVELAND, OHIO, OCTOBER 24, 1895.

NO. 43

LAKE FREIGHT MATTERS.

The weakening in ore and grain freights came to a halt today, and the Duluth-Buffalo wheat rate, which had gone down to 5c, recovered so far that shippers were offering 5¼c. Ore tonnage has been placed to load at Ashland for South Chicago at \$1.50, but \$1.60 is claimed as the rate to Lake Erie ports. A return to the old rate of \$1.75 seems very likely soon, with other rates to correspond, in view of the quantities of ore at the docks.

Coal freights remain practically unchanged, both in feeling and rates. There seems to be no disposition to push coal to the head of Lake Superior, and this seems to be the result of a determination on the part of dealers to get better prices for their product up there next spring. This idea is strengthened by the statement given out that Capt. James Davidson and others have already made coal contracts, Lake Erie ports to the head of Lake Superior at better than 40c.

The receipts of soft coal for the season so far are given by the agent of the Northern Coal Storage Co. as 617,919 tons at West Superior and 266,890 tons at Duluth. A large fleet of soft coal laden vessels are now bound there, and the prospects are that the stocks of soft coal will be larger than last year, though no heavier than is warranted by the immediate trade. The receipts of hard coal cannot be definitely obtained, but it is estimated that there is at present 317,889 tons in sight, including the coal shipped and in stock. The visible demand is about 600,000 tons, which indicates the extent of the shortage. Last year's hard coal stock at this time was 347,748 tons for the head of the lake. The September receipts there of soft coal were 109,819 tons at West Superior, and 88,817 tons at Duluth.

A table showing the visible supply of wheat at various localities on Saturday, Oct. 19, will be found on Page 4. The supply at the head of the lakes, by elevators, is as follows, 76,858 bushels of the aggregate being rejected or condemned:

	Bushels
Belt Line	616,063
Consolidated	1,639,769
Globe	2,085,457
Great Northern	470,263
Superior Terminal	839,844
Consolidated H	89,276
Consolidated B	88,170
Aggregate	5,828,842
Wheat in store at Minneapolis	10,611,038

STORM WARNINGS FOR VESSEL MASTERS.

In order to furnish all masters of vessels with the latest information of the weather conditions on the Great Lakes and supply them with storm warnings, Mr. N. D. Conger, the official in charge of the weather bureau office at Detroit, Mich., has been instructed to furnish a copy of all storm warnings in addition to the weather maps for the use of vessel masters passing Detroit. Arrangements have been completed with the postoffice department whereby these warnings and weather maps will be delivered to the masters by the mail boat. In case the mail boat does not have mail for each boat and the master desires information of the latest weather conditions, the following code of signals

promulgated by the postmaster at Detroit may be used:

Signal to passing boats from U. S. Mail Boat for delivery of mail—one long, one short, and one long blast. Signal for steam vessels wanting mail boat to call for mail, same.

Signals for sailing vessels requiring mail boat—white flag by day; flashing bright light at night.

Signal from mail boat to large boats to check down—three blasts from mocking bird whistle.

Signal from row boat belonging to mail boat when approaching vessels for delivery of mail—white flag in daytime; swinging bright light at night.

For ordinary storm warnings the mail boat will display a red flag with black square center; for information signals, the red or white pennant, red for easterly and white for westerly winds; and for warnings of severe or dangerous storms, two flags, red with black square centers. In the latter case the mail boat will deliver storm warnings to all boats bound down.

The Kendall Reporting Agency, at Port Huron, Mich., will deliver storm warnings to boats passing out into Lake Huron.

MARINE LITIGATION.

TO THE MIDDLE OF THE LAKE.

The United States Court of Appeals handed down a decision at Chicago Saturday, declaring that the jurisdiction of the state bordering on Lake Michigan extends to the middle of the lake in cases where there is no conflict with the admiralty laws of the United States. The opinion is in the appeal of the late Anson A. Bigelow, owner of the steamer Robert Holland. Nov. 1, 1891, Erik Anderson was killed in a collision between the barge Parana, in tow of the Holland, and the schooner William Aldrich. The collision occurred six miles from the Wisconsin shore. The judgment of the court below is affirmed in awarding damages to Anderson's estate.

STEAMER THOMSON LIBELED.

A suit to recover \$13,014.35 damages was filed in the United States Circuit Court Tuesday by the Hawgood & Avery Transportation Co. The American Steel Barge Co. is the defendant. The plaintiff is the owner of the steamer S. S. Curry. The defendant owns the steamer A. D. Thomson. In May, 1894, the S. S. Curry was on her way from Ashland to Cleveland with a cargo of ore. The Thomson, it is alleged, failed to slack up, as she had indicated her intention of doing, and the result was a collision, in which the Curry is said to have sustained damages amounting to \$8,814.35. An additional sum of \$4,200 for the delay incident to repairing is claimed, making the total amount \$13,014.35.

EXERCISED DUE DILIGENCE.

Judge Nelson, of the United States District Court at Duluth, has filed an important decision in the case of the Empire and Mitchell transportation companies against the Reading Coal Co., to recover damages on account of delay in unloading the steamers Gilbert and Gratwick, which was caused by a strike of the coal handlers in July, 1894. He finds that the coal company is not liable, having exercised due diligence.

OUTLOOK FOR NEW TONNAGE.

The past week has been a continuation of the lull which came after the awards, in quick succession, of an almost unprecedented number of contracts for tonnage to lake shipyards. Within a fortnight another series of orders may be looked for, perhaps not reaching in the aggregate the sum of those contracts already placed, but probably enough to insure for all lake yards a winter of unparalleled activity. Some of these orders will be for boats which have for some time been contemplated, and which have already been discussed to some extent in print. Others will be entirely new to the marine public, and perhaps in the nature of a surprise. The only announcement of the week has been that the Jenks' Ship Building Co., of Port Huron, will build a wooden steamer on their own account.

At the Cleveland Ship Building Co.'s yard the plating on the big Wilson liner is about one-third completed, and the ways are being placed preparatory to putting in blocks for the keel of the Wolvin steamship.

At the Globe Iron Works Co.'s yard, the bottom of the builders' 432-foot steamship is far advanced. Work on the revenue steamer Carlisle is progressing satisfactorily. Mr. J. E. Jefferis, chief engineer of the revenue cutter service, and Capt. A. D. Littlefield, superintendent of the material and construction, are located in Cleveland to represent the government.

TOLEDO.—The ferry steamer Shenango No. 2 was made ready for launching last Saturday, at the Craig Ship Building Co.'s yard, but the water has ever since been so low that it was impossible to put her in the water. This will be done as soon as the water rises.

WEST BAY CITY.—At the Wheeler yard the Katahdin has been turned over to her owners. The plating on the Eddy and Roby steamers is well advanced. The keel of the Whitney steamer has just been laid down. These are in the stocks alongside the river. The keel of the Mitchell ship will be laid alongside one of the two slips where the building was formerly done. These slips will be dredged to a sufficient length for the largest class of boats, and it is this work that will practically double the out-door capacity of the yards. The new tool house, which has already been built, will, when fitted out, increase the indoor capacity about 100 per cent. The new tools are being received and placed daily. Some new contracts for this yard may be heard from soon.

At the Davidson yard work is progressing rapidly on the two large schooners already laid down, and which will be completed before midwinter. Two other boats will be put up next winter on the builders' account, and orders from outside parties may be placed soon.

DETROIT.—At the Detroit Dry-dock Co.'s yard at Wyandotte the plating on the Cleveland & Buffalo passenger steamer is about half plated. A great deal of the joiner-work on her cabins has already been completed, and the machine shop work is equally well formed. The six big boilers are practically finished, and the great walking-beam engine, built by Fletcher & Co., of New

(CONTINUED ON SEVENTH PAGE.)

LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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CONSTANT PRESSURE DURING A BLOW-OFF.

Water ordinarily boils at 212 deg. F., but when under a greater than atmospheric pressures, as in a steam boiler, the boiling point becomes higher, varying for each pressure. At 80 lbs. gauge it does not boil until the temperature is 324 deg. F., and at 79 lbs. the temperature is nearly a degree less. If, then, a cubic foot or any given quantity of water be reduced in pressure from 80 lbs. to 79 lbs. gauge the degree of heat that must pass from it will evaporate a portion of it into steam. This is what happens at each sudden increase of load on an engine, otherwise our steam gauges would show a merry dance. It is most noticeable in the running of the engine after the fires have been drawn. The steam space of the boiler is only equal to a supply of steam for a few revolutions of the engine, but as more steam is thrown off from the water at each diminution of pressure, the engine will do a considerable amount of work after the boiler has ceased to receive any heat.

According to Count Rumford a cubic foot of water under 80 lbs. steam pressure, and temperature to correspond, contains as much explosive energy as a pound of gunpowder, or the steam which flashes out of the hot water when the pressure is suddenly removed contains as much force as does the gas from the ignited powder.

To accurately show what takes place in pressure reduction and steam formation while the water is being blown off would require more mathematics than it is the purpose of this article to give. Approximately, however, a solution to the question may be suggested. Suppose 100 cubic feet of water, at an average pressure during blow-off of 60 lbs. by gauge, are to be blown off from a boiler. The steam which replaces the water in the boiler will be evaporated from the water by its own heat as already described, and as the whole amount of water is only in it at the beginning the heat must come from the average amount during blow off, which would be about 50 cubic feet. To evaporate a cubic foot of steam under the above conditions requires 160.85 units of heat, that being the latent heat of a cubic foot at 60 lbs. gauge, and 100 cubic feet will accordingly require 16,083 heat units.

A cubic foot of water under above conditions contains 15,983 heat units, and 50 cubic feet are to supply 16,083, or 321.6 per foot. Deducting this from the total 15,983, there remains 15,661.4 heat units per cubic foot, which corresponds with a pressure of about 53½ pounds. This

shows that about 6½ lbs. reduction in pressure is required to supply steam enough to replace the water where the average pressure during blow off is 60 lbs. The steam which was in the boiler at the start has, however, fallen an equal amount in pressure, and therefore occupies a larger space rendering a portion of the reduction unnecessary, and there are other causes which affect the final pressure. This solution shows why removing water to double the steam space does not halve the pressure (it could not halve the gauge pressure in any case, but, instead, the absolute pressure), and it also incidentally shows some things about boiler explosions, and may indicate a thing or two about the priming of an overworked boiler which young engineers might do well to bear in mind.—Frank Cawley in American Machinist

MARINE RECORD Life Savers' Series.

KEEPER EWALD, AT PENTWATER.

(ILLUSTRATED.)

During the recent gale on Lake Michigan nearly all the crews on that lake were called upon to give exhibitions of their prowess at battling with the elements and succeeded in several cases in rescuing whole crews from the jaws of death. Prominent among those was the Pentwater crew. The keeper in charge of this station



CAPT. MARTIN R. EWALD.

is Captain Martin R. Ewald, who has been in charge of this station since 1887.

Capt. Ewald was born in Germany in 1856, his parents emigrating to America and locating at Grand Haven, Mich., when he was but two years old. When a boy he was employed by fishermen in packing nets, and soon became a full fledged fisherman himself. He followed this calling until 1880, when he enlisted as surfman No. 6 at the Manistee life-saving station. His good qualifications for this work were speedily recognized, and after serving one season he was promoted to the position of No. 1. He held this position at the Manistee station until 1887, when he received his present commission.

NEW PATENTS.

Following is a list of new patents which have been recently awarded on inventions bearing on navigation, marine trade and relative matters:

547,903. Fog Signaling Apparatus. John B. Tarr, New Bedford, Mass. Filed Sept. 19, 1893.

548,041. Propeller. Jacob Culin, Philadelphia, Pa. Filed March 12, 1895.

547,808. Life-Preserver. Alexander von der Ropp, Berlin, Germany. Filed June 21, 1895. Patented in England April 2, 1894; in Austria April 2, 1894; in Italy April 30, 1894; in France June 20, 1894; in Belgium Nov. 15, 1894, and in Norway Dec. 14, 1894.

A full description of these patents can be obtained by sending to the Patent Office, Washington, 14 cents for each, and mentioning THE MARINE RECORD.

ADMIRAL WALKER FAVORS A WATERWAY.

In speaking of the proposition for the improvement of the canals and the establishment of inter-state water communication for the requirements of our commerce and for the national defense, Admiral Walker said a few days ago: "It is a stupendous undertaking to deepen the Erie canal, and its success would depend largely upon the character of those having it under control. It would cost many millions, but if earnest, practical men were placed in charge, who would expend those millions honestly and with wisdom, it would be a profitable investment in more ways than one."

"If I am correctly informed the proposition that seems to have met with the most favor in relation to establishing deep water communication between the lakes and the ocean contemplates a widening and deepening of the Erie canal and other necessary waterways so that vessels of 14 feet of draft will be accommodated."

"In such a case the benefits to commerce could hardly be estimated. Vessels could be loaded in Chicago, Milwaukee, Duluth and other lake ports in the Northwest and transported with their cargoes direct to New York or across the ocean for that matter."

A paper was read before the American Society of Civil Engineers by T. C. Clarke, C. E., in which he concludes that a 7,000-ton ship could carry grain from Chicago to New York via the Erie canal, deepened to twenty-five feet, for 3.22 cents per bushel; that with the Erie canal deepened to nine feet, it would cost four cents per bushel in steel barges 90 feet long, steam towed. He also deduced that a steel barge 17 1-5 feet wide, 7½ feet draft, 180 feet long, could be towed from New York to Chicago and carry grain for 2½ cents per bushel. Chauncey N. Dutton replied to him and claimed that, by properly applying Mr. Clarke's basis of cost, grain could be carried from Chicago to New York via the St. Lawrence and Lake Champlain route in a 7,000-ton vessel for 4¾c per bu., long trip, equal to 1.15 cents per bushel.

GAS ENGINES AT A DRY-DOCK.

A noteworthy application of gas engines has been made in England by the River Wear commissioners at Sunderland, says Cassier's Magazine. Several Tangye engines have been coupled direct, without intervening belt or gearing, to centrifugal pumps for emptying a graving dock. This is probably the first installation of the kind that has yet been made anywhere, and it is all the more interesting, therefore, to be told that it has thus far proved itself very efficient and convenient. There are several pumps, each capable of discharging over 2,600 tons of water per hour, and at maximum duty, each of the engines indicates about 120 h. p. A self-starting attachment is connected with them.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD by George F. Stone, Secretary Chicago Board of Trade, October 19, 1895.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Albany		25 000	45 000		15 000
Baltimore	547 000	323 000	168 000	66 000	
Boston	289 000		9 000		
Buffalo	1,741,000	704,000	152,000	164 000	875,000
" afloat					
Chicago	16 313 000	2 074 000	513 000	178,000	123 000
" afloat					
Cincinnati	43,000	17 000	37 000	36 000	94 000
Detroit	525 000	33,000	25 000	12,000	
" afloat					
Duluth	5,829,000		160 000	112 000	711,000
" afloat					
Indianapolis	117 000	16 000	3,000		
Kansas City	1 064 000	7,000	42,000	18,000	
Milwaukee	516 000		11,000	48 000	161,000
" afloat					
Minneapolis	10 611 000		364,000	61 000	162,000
Montreal	298 000	2 000	56 000	3 000	4,000
New York	4,152 000	154 000	725,000	25 000	14,000
" afloat	77 000				
Oswego	39 000	22 000			52 000
Peoria	109,000	52 000	344 000	2,000	2 000
Philadelphia	299,000	100 000	227 000		
St. Louis	938,000	40 000	510 000	13 000	1,000
" afloat		16 000			
Toledo	1,000,000	270 000	149,000	116,000	
" afloat					
Toronto	104,000		12,000		17 000
On Canal	310 000	23 000	68 000		813,000
On Lakes	1,278 000	2,425 000	760,000	25,000	657 000
On Mississippi					
Grand Total	46,199,000	6,479,000	4 380,000	879 000	3,701,000
Corresponding date 1894	76 659,000	3 399,000	9 145,000	408,000	3 068,000

THE MARINE RECORD is the headquarters for marine publications of every description. No. 144 Superior St.

EXONERATED FROM CHARGES OF COWARDICE.

Shortly after the wreck of the schooner M. J. Cummings, off Milwaukee, May 18, 1894, Keeper Pratton, of the life-saving station at that port, was removed. Captain Pratton and his crew had been charged with cowardly conduct in the newspapers, and the investigation which followed resulted in his removal. It is but due to him, however, to say that the charges of cowardice were not sustained. The following extract from the annual report of General Superintendent Sumner J. Kimball, of the Life Saving Service recently issued, may serve to more thoroughly clear up all doubts in the matter. The report gives a detailed description of all the circumstances connected with the loss of the vessel, and concludes:

"Six of the seven persons composing the crew of the Cummings were lost, and the horror of the awful spectacle naturally and properly excited intense feeling, which manifested itself in a loud demand for searching inquiry. This, however, was already assured by the provision of the law directing that all disasters involving loss of life shall be inquired into for the very purpose insisted upon; namely, to ascertain whether any of the officers or employes of the Service have been guilty of neglect or misconduct. Exhaustive inquiry was made both by an officer of the United States, who was instructed to hear all witnesses and procure all evidence obtainable, and also by the coronor of the county of Milwaukee.

"Nothing in the testimony reflected upon the courage of the keeper or crew, and therefore the only question appeared to be whether, in view of all the facts, the former as the responsible party directing operations was chargeable with errors of judgment sufficiently grave in their character and results to require action on the part of the Department.

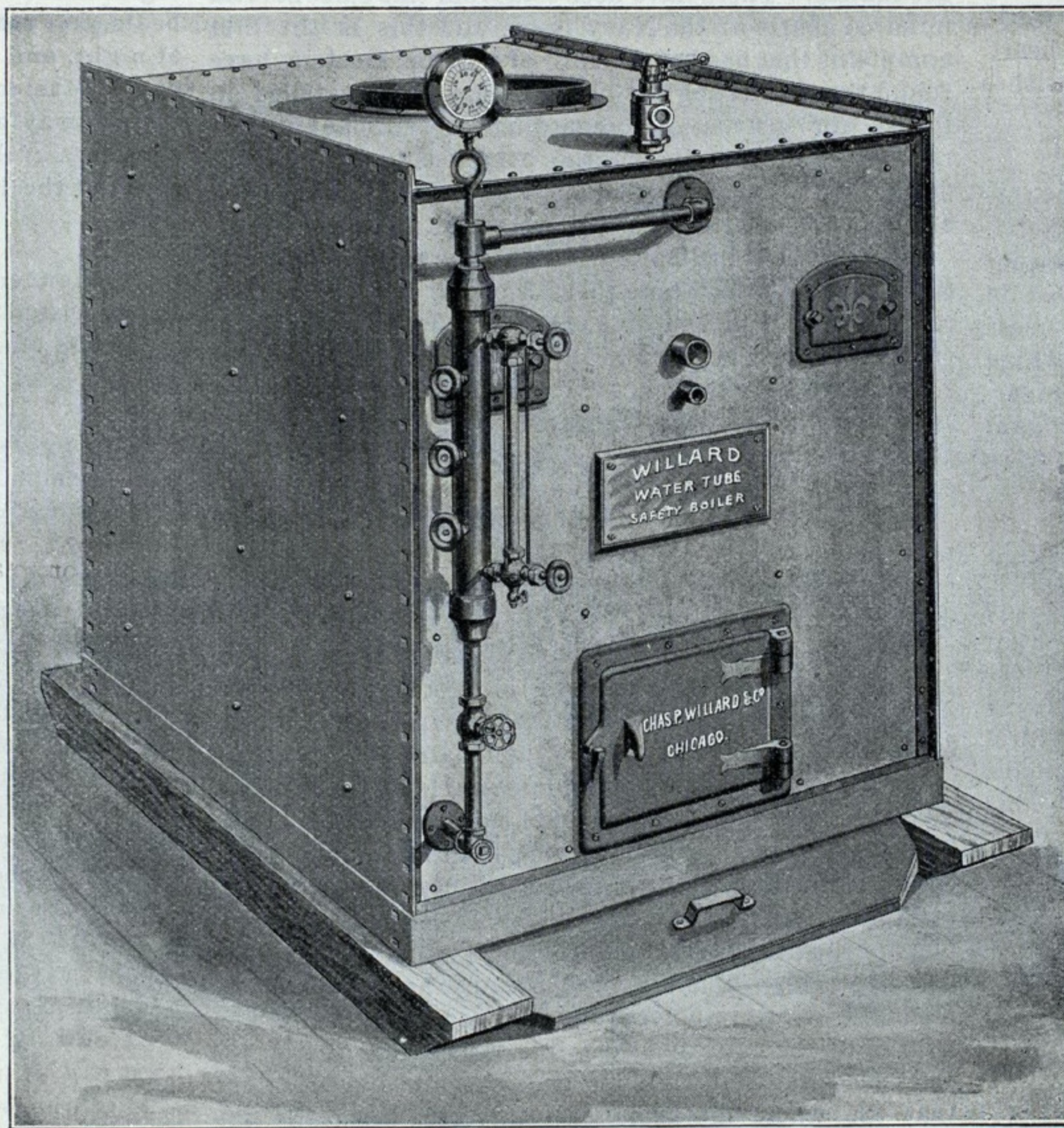
"No difficulty was experienced in reaching a conclusion upon this point. Obviously a very serious mistake was committed at the outset when he declined to wait for the tug Hagerman to take his boat out. While promptness of action was extremely desirable, the undertaking was so hazardous, and a successful issue of the first attempt so all-important that there was every reason for proceeding with due deliberation, and not without a clear and well-matured plan of operations. Only a few minutes would have been lost by waiting for the tug, and the expedition would then have been inaugurated with every prospect of success, while to go out with oars was plainly to invite disaster to his own crew, perhaps bring all his courageous purposes to naught, and long defer, if not defeat, the possibility of taking off the shipwrecked people alive. With the tug to hold him up to windward he could have veered his lifeboat down to the wreck, and there is good reason to believe, have safely taken off every person. But whether he would have succeeded to this extent or not, the fact remains that such a course was a proper one.

"Aside from the error committed in not waiting for the Hagerman, the keeper, after getting out under oars, made the blunder of letting his boat drift down to the wreck, without due preparation and evidently with no well-defined plan of action. Notwithstanding the lack of a tug, if he had anchored his boat and then veered down with a strong line in hand to be passed on board, it is quite probable that a rescue would have been effected. And even without the tug and without anchoring, just as the incidents actually occurred, if a proper line had been passed to Surfman Gerdes when he landed on the wreck the lifeboat might have been made fast, and though somewhat damaged, would in all probability have carried all the people ashore.

"The use of a rudder instead of a steering oar in maneuvering the boat, which the testimony disclosed, was also an error. How much, if any, this mistake may have contributed to the accident which happened to the life boat can only be conjectured, but it was, among

the other circumstances, a fault of no inconsiderable magnitude.

"In the matter of sending the telegram requesting the Racine crew to come up with their lifeboat, Keeper Pratton fell very far short of his full duty. The situation was one of appalling urgency, and demanded that no possible loophole should be left open for a misunderstanding to creep in. The keeper professed to believe that his own lifeboat was not fit for another encounter with the storm, and he had conceived of no other plan than to go out with a boat of that kind. Upon the use of a lifeboat rested all his hopes, and he knew that there was one at Racine. Under such circumstances it would seem that only ordinary prudence would have suggested to him the vital necessity of making his appeal for aid so plain in detail, and so emphatic, that there could have been no possibility of losing precious lives by negligence in the transmission of a message. He should have avoided the use of a telephone—especially through the medium of a third party—and instead have sent his message directly by telegraph; and he should have gone to the telegraph office himself, written his message with his own hand, and requested a reply, which would have shown whether his wishes were correctly understood. Perhaps the negligence of



THE WILLARD SAFETY WATER-TUBE BOILER.

the keeper in this regard was the most grievous error of the entire day.

"While waiting for the coming of the lifeboat, which in truth had not been called for, he felt no need of devoting his mind to the formation of other plans for the meantime, and when at last at 3:30 o'clock, upon the arrival of a surf boat only, he realized his unfortunate situation, the hour was too late for him to devise, if the idea had occurred to him, means similar to those employed by the rescuing party, which was already about to start out of the harbor.

"Regarding the condition of his own boat to do further service that day, the evidence shows that while it is possibly doubtful whether she was available for another trip with a full crew, she was, even without repairs, a better boat than that of the Nebraska, and could have been even more safely used, as the latter was, to veer down from the scow with one or two of the life-saving crew in her, and take off the shipwrecked people who were then alive.

"The keeper had been appointed by promotion from the ranks of the surfmen, where he had made such an excellent record that he was believed to be the most suitable man available for the position, but his lack of

the essential requirements of leadership, made conspicuously evident on this, the first occasion of serious service after his promotion, left no doubt as to the duty of the department to see that other provision was made for the command of this important post."

ENLISTING MEN FOR THE NAVY.

In answer to the statement that the government is finding difficulty in enlisting men, Rear-Admiral Ramsay, Chief of the Bureau of Navigation, gives these figures: In 1892, 4,515 men and 830 apprentices were enlisted. The same year, 1,061 men and 1,460 boys who applied for entrance into the service were rejected. The following year 4,350 men and 646 apprentices were enlisted and 5,969 men and 1,177 boys were rejected. In 1894, a total of 15,318 persons applied for enlistment into the naval service, 6,318 more than the law then allowed. Of those making applications only 4,525, 561 of whom were apprentices, were enlisted. The figures for the last fiscal year give equally as good a showing. "You can see," said the Admiral, "that we can afford to be very particular in making selections, and a man or boy, in order to get into the service, must be A1 in every respect. We are now doing everything in our power to make the navy strictly American, and in order

to attain this result we are enlisting men only who have the requisite physical qualifications and character, and who can produce evidence of their citizenship. We are obtaining large numbers of applications for enlistment but unless the applicants are first-rate men we reject them. No advances are made to boarding house keepers for bringing men to receiving ships for enlistment, and any evidence of the crimping system is sufficient for the immediate rejection of the applicant. Strict orders have been issued to recruiting officers to in no way incur expense in enlisting men. In consequence all men in the navy are there of their own free will, and every cent of their pay is delivered to them, and not to any promoter of the crimping system. The men in the navy are better treated and have lighter work than in any other service in the world. I have heard and have good reasons for believing it to be true, that there is a great deal of harshness displayed in the merchant service toward the men. But that has nothing whatever to do with the navy."

PUNCHING BOILER SHEETS.

I saw a handy contrivance for punching boiler sheets recently, that is so inexpensive that any shop can well afford to have one. A track of light rails was laid on the floor in front of the punch, and on this there traveled a carriage of such a height that a sheet placed upon laid on the proper level for punching. Bolted to the floor is the rack with teeth of a pitch equal to the spacing of the rivet holes. On the carriage is a dog that drops to and engages with the teeth of the rack. One man pushes the carriage ahead one notch at a time and draws it back until the dog is solid against the tooth of the rack at each stroke of the punch. Another man stands ready to stop the punch should the first man fail to get the carriage in adjustment before the punch descends on the next stroke. In this way a sheet can be punched as rapidly as the punch will work, and each hole will be properly spaced and in alignment. For changing the pitch of the rivets it is only necessary to change the rack beneath and each sheet is adjusted for a line of holes as soon as it is clamped in position for the first hole. There is no necessity for a large gang of men being kept busy at the punch; two can do the work in about one-third the time consumed in the ordinary way with a gang of four or five. Of course it is essential that the wheels and rails shall be true, that the dog and rack shall be carefully machined; but other than this the apparatus requires no special care in its manufacture.—James Allen.

The new steel lumber steamer Simon J. Murphy carries 1,400,000 feet of lumber.

THE MARINE RECORD

ESTABLISHED 1878.

PUBLISHED EVERY THURSDAY, AT 144 SUPERIOR ST.,
(LEADER BUILDING), CLEVELAND, O.IRVING B. SMITH, } PROPRIETORS
CAPT. JOHN SWAINSON, }

BRANCH OFFICE:

CHICAGO, ILL., ... 238 Lake Street.

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Entered at Cleveland Post Office as Second-class Mail Matter.

CLEVELAND, O., OCTOBER 24, 1895.

THE lake fraternity are sincerely sorry to lose so efficient an officer as Major Ruffner, of the engineer corps, who has been stationed at Buffalo. He had the lake work, and particularly Buffalo's harbor interests, truly at heart. He will go to his new field of work with the best wishes and friendship of all.

THE proposed united action to secure government regulation of the speed and handling of vessels in the St. Mary's River is certainly praiseworthy, although somewhat tardy. Most of the collisions which have occurred in narrow channels this season have resulted from the reckless and inconsiderate actions of other vessels which escaped damage. It has meant the loss to the underwriters of what is the equivalent of a large individual fortune during the past few months or since freights were restored to a paying basis. The loss of time to the vessels has meant the sacrifice of many thousands of dollars by the owners of the unfortunate boats. This is not right, and the remedy is easily applied.

THE government is rapidly getting rid of some of those old sea dogs who have stood the Navy in such good stead in the past. It is now announced that Rear Admiral Kirkland had been detached from duty and ordered home. He will probably apply at once for retirement. This grows out of the fault found by the government with a letter written to M. Faure, congratulating the latter on his election to the presidency of the French Republic. The Admiral represented that the letter was of a purely personal character, and was written in his private capacity. The government has differed from him in respect to the propriety of the letter, and the Admiral has doubtless grown tired of serving under people who busy themselves so much with trifles that they have no time to attend to the greater questions now presenting themselves to the United States.

NEVER has the fact that the day of small boats is in its twilight been so pointedly emphasized as during this season. Last year good weather afforded some partial compensation for low freights, but the little fellows were able to make but a few trips at good figures this season without encountering trials which either wrecked them beyond hope of repair or left a repair bill which was very large in proportion to the value of the boat. This has been the case in scores of instances, and while there have been a number of heavy repair bills on large steamers due to stranding or collision, the loss in proportion to the total value of the investment, was very much lighter. Then too, the losses on the smaller boats have in an exceptionally large number of cases fallen, where they could be ill afforded, in a few cases meaning almost ruin to the unlucky owner who sailed his little craft themselves. Of course, owners of boats engaged in inter-lake trade were to a degree protected by insurance, but they can see which way the wind blows, and when they save any money from the wreck, are inclined to put it into the large steel craft. This may be taken as an indication that the impetus given to shipbuilding, is by no means exhausted, even in respect to boats for next season's trade.

BADLY MIXED UP.

A "correspondent" of a lake contemporary takes occasion to slur the charts issued by the Hydrographic office in a way that only tends to throw a lurid light upon his own ignorance, and to make him the laughing stock, were his identity known, of a very large and growing class of lake navigators. He writes as follows of the new engineer's chart of Lake Superior:

It differs from the Navy chart in that it is up to date, larger scale, and on the polyconic instead of the Mercator. The Mercator projection permits a given course to be platted in a straight line, but to do this the scale of the map varies, and it becomes a difficult matter to obtain correct distances between headlands. * * * The Navy chart (Mecator) is a navigator's chart, while the Poe (engineers') is a pilot's chart, and for that reason I believe it better suited for the needs of the lake interests. You can readily test the two charts as regards scale, and you will see the difference. I am glad the engineer corps has been able to get out this chart because it will show the character of charts that the engineer corp can furnish as opposed to such compilations of doubtful accuracy as the Navy has hitherto published. Most of the latter are simply copies of the old engineer's charts, very imperfectly brought up to date, and on the Mercator projection, which is the correct projection for ocean charts, but for coast charts I do not believe to be of much use for headland to headland sailing.

The charge of inaccuracy in scale, made against the Navy, or hydrographic charts, is about as novel as it is groundless. There have been sold from this office several hundred charts of the Navy issue, and this is the first complaint that has been heard of. Some masters have found themselves bewildered, and have called in to ask for instructions regarding measurements; but none of them have shown the over-weening conceit to declare at fault a system on which ocean navigation has been followed since charts were first invented.

But the writer intimates that this sort of thing is all right on the ocean, where there is plenty of room; but the charts are of little use in "headland to headland sailing." If this be true the poor wretches who are engaged in the coasting trade of the United States are certainly working at a very great disadvantage. The "correspondent" doesn't seem to realize it, but they really are as rocky coasts and prominent headlands on salt water as on fresh. Fortunately these people understand the scale of these charts, and don't try to measure with a two-foot rule, and to compute by statute miles, a most laborious method of calculation.

The scale of the hydrographic chart alters, it is true, with the degree of latitude; but this is only in the interest of greater accuracy, and if this "correspondent" will apply his dividers to the side of the chart abreast of the locality where he has taken his measurement he will have no difficulty in learning the distance in nautical miles. This is the mile registered by his patent log, and is much easier handled in his mental calculations than the statute, or land measurement mile. Then, when he has completed his calculations, let him, if he must, reduce the distance to statute miles. But because he has probably made the error of applying his dividers to the scale at the bottom of the map, and has, in consequence found his calculations at fault, it is not necessary for him to cry out that the whole mathematical universe, especially the Navy Department, is out of gear.

The Hydrographic Office, in the surveys which were the basis of the current issue of charts, has used the old engineer charts, together with all other sources of information, and has applied the corrections learned through its own thorough surveys, which included a thorough system of sounding in shallow water. The accuracy of the Hydrographic Office, in its work and in the published results of such work, has been the subject of repeated complimentary comment, particularly in the lake region, where much of its work has proved a sort of revelation, and has met with hearty appreciation. Certainly the office has never found it necessary to publish three or four pages of errata, as the Light-House Board did recently in connection with its regular List of Lights, Beacons, and Buoys.

Perhaps if this sage correspondent would pay a short visit to one of the branch Hydrographic Offices he might learn a few points which would tend to raise his opinion of the Navy charts. In return he might tell why the duties of navigator and pilot differ so materially as to require separate sets of charts.

WANTED—Address of Matt Gardner, lake engineer or fireman. Important. Address THOMAS WILLIAMS, 238 Lake st., Chicago.

NOTICE TO MARINERS.

MORE LIGHTS AT BALLARD'S REEF.

The Lake Carriers' Association, with the consent of the United States Engineers, is causing the erection of six black spar buoys, with six floats, showing red lights at night, to mark the extreme western limit of the channel at Ballard's Reef. This is considered necessary because of the unusual number of strandings caused by the very low water. Vessel captains are cautioned to keep the Upper Grosse Isle a trifle open to the westward, and to keep in the bounds with the black buoys in day time and with the red light at night until the lower stake or red light is reached, and then to get on the Grosse Isle ranges until the boat enters Limekiln Crossing.

At the present stage of water there is a channel of 16 feet 5 inches of deep water. Vessels must not go to the eastward of the two red stakes, which are placed on the ranges, as there is a dangerous obstruction in that direction. It is necessary to run under very slow check while passing over Ballard's Reef. The white lights east of the red stakes show dredging work and there is less than 14 feet of water there. When the water is too low for Lake Michigan boats to go through the channel, a red flag will be shown by day on Mullen & Gatfield's dock at Amherstburg and Sandwich, and a red light by night. When the water is too low for Lake Superior boats, two red lights will be placed, one over the other at night, and two red flags in the same position in the day. Masters are requested to use caution not to carry away any of the buoys. The large number of accidents at this part of the Detroit River lately on account of the low water is the reason for these precautions.

BUOY REPLACED

Commander Dayton, inspector of the Ninth Light-House District, gives notice under date of October 3 that the red 3d class can buoy marking the NE. end of Sheboygan Reef, has been replaced.

NOTES FOR NAVIGATORS.

Both lights at the entrance to Owen Sound harbor have been changed to red.

Additional marks will be erected at Rain's dock at the Neebish, to indicate the depth of water at Sailor's Encampment.

The Hydrographic Office announces the issue of an engraved chart of Hay Lake Channel, showing all the new marks.

The boulder on which the Craig struck is on the ranges, and was thrown up, it is claimed, by the dredges at work there.

A barrel buoy has been placed by the steamship Michigan at the spot off Point-Pelee where the steamer Presley fetched up.

The water in the passage between Monroe Island and Put-in-Bay is very low, and nothing drawing 14 feet should pass through it.

The Amaranth has landed boilers and other material for a new fog signal at Eagle Harbor. The new fog horn will be in operation next season.

A lighthouse has been erected and put in operation by the Canadian government on the western extremity of Pie Island, Thunder Bay, Lake Superior.

A white lantern light will be shown from the mizzen rigging of the schooner Bruce, sunk at the head of Mud Lake, about 3,000 feet SW. by S. from Encampment Crib.

The schooner C. N. Johnson, whose owners expect to raise her, lies about half a mile north-west of Bay Point, close to the channel bank. Lights will be kept on her. Vessel masters are requested to check down while passing her.

Capt. J. E. Williscroft reports having found but 8½ feet of water on the inner south-west patch or shoal, near Simon Rock, in the south-west passage to Algoma Mills. The charts show three fathoms on it. Approximate position, one-quarter mile S. by W. ½ W. (S. 16° 52 W.) from Simon Rock.

The Penberthy Injector Co., of Detroit, Mich., write us that in visiting the State Fair of Missouri, recently held at St. Louis, they found 19 manufacturers of traction and farm engines with 40 engines on the grounds. In looking over these engines they found on 33 engines out of 40 the "Penberthy" injector, the other seven having five different makes. They also state that two manufacturers out of those representing the seven engines agreed to use the "Penberthy" Injector in 1896.

OUTLOOK FOR NEW TONNAGE.

(CONTINUED FROM THIRD PAGE.)

York, is on its way from the builder to the Wyandotte yard. The paddle wheels, on which much more pains have been taken than on any other side-wheeler on the lakes, are about finished, and will be set up in the shop next week. The mortising and fitting is perfect, and the arm of each blade will fit perfectly into any mortise in the hub and the axle of the wheels will turn in the best journals to be found. The keel blocks for the Jones steamer have been placed in the opposite side of the slip.

CHICAGO.—The work on the several big steel hulls in the Chicago Ship Building Co.'s yard is progressing as fast as receipts of material will allow.

The contract placed by the Niagara Navigation Co., with the Bertram Engine Works, Toronto, is for a steamer of the side-wheel passenger boat type, having three decks, and is only intended for day service. The steamer will be 277 feet over all, 269 feet on the water line, 32 feet beam, 59 feet 2 inches over guards, and 13 feet 6 inches moulded depth. The hull is to be built of steel throughout; the engine compound condensing. The Bertram Co. has also contracts for two side-wheel steamers 130 feet long by 26 feet beam, for the Upper Ottawa Improvement Co., to be used for lumber towing on the Upper Ottawa river.

The tug James P. Devvey was launched at Vermillion last Thursday, after being entirely rebuilt and lengthened ten feet.

Scagel & Jones launched a tidy steam yacht at Sarnia on the 16th. Her name is Tepiakan, an Indian word signifying a square, which however, has nothing to do with her dimensions, which are 73 feet over all, 54 feet keel, 11 feet 8 inches beam, 5½ feet draft. She has a compound engine, 7 and 14 by 10 inches and a Scotch-type boiler allowed 132 pounds working pressure. The machinery was built at the Polson Iron Works, Toronto. Her screw is of the Herreshoff pattern. She will carry two spars, and has a tank cabin, fitted with all conveniences.

REPAIRS TO THE TYRONE.

(ILLUSTRATED)

Notwithstanding the hard usage received by the new steel schooner Tyrone, built at the Globe shipyard, her bottom, after she was placed in dry-dock, made a showing which reflects great credit on her material. Although 40 plates were so badly bent that they had to be removed, not one was fractured, all being replaced in position after passing through the rolls. While a number of frames were badly bent, not one of these was broken. Such a record, with such a damage, is probably without a parallel.

A picture of the schooner Tyrone, as she lay in the Cleveland dry-dock—which she left Tuesday evening—gives a bow view of the new type of steel schooner coming into vogue on the lakes. A smoke stack aft tends to give her the appearance of a steambarge, but the stack is much smaller, and of course, does not pour out as much smoke except when the deck engines are working.

In this connection an explanation would seem to be required in answer to possible queries as to why the tow-line should have parted when the schooner was fitted with a towing machine and a wire hawser. It should be stated that the cause lay with the fastening on board the steamer, the hook to which the tow line was fastened proving inadequate to the emergency. The tow-line was a 1½-inch Warrington, made especially for the Tyrone. Not only is it tested as a whole, but each separate iron is tested. This tow-line, prior to the accident, was run over by a schooner which it scraped from stem to stern. The towing machine behaved perfectly, taking in the line rapidly as soon as the hook gave way.

GENERAL REPAIR WORK.

The Farwell and Rutter have been repairing their

damages at the Ship Owners' dry-dock this week. The steamer required a new forefoot, 150 feet of new keel, new garboards, a little new rail and other minor repairs. The Rutter received a new garboard and about 300 feet of new bottom planking. The Pease, Planet and Hackett were in to stop leaks. The schooner Marion Page arrived Wednesday night with steam pump aboard, and will enter the dock to-night.

At the Cleveland dry-dock the Gordon Campbell followed the Tyrone to stop a leak and have some butts calked.

DETROIT.—The steamer City of Marquette will be brought here for a new compound engine and larger boiler, doubling her power. The steam yacht Wayward is being rebuilt at the Oades' yard. The John Oades was in the Detroit dry-dock for temporary repairs to the damage received at Kelly's Island. She has a jagged hole about 15 feet long in her starboard bow, and ten frames are broken. Her bottom is also badly damaged. She has left for Duluth. The Northern Light was in dock for a new wheel.

The Fryer was brought here Wednesday evening after an excellent wrecking job by Capt. Martin Swain with the Favorite. The Fryer's bow was cut completely off from the stem 26 ft. aft. The hole, which would admit a locomotive easily, has been bulkheaded, but it is all two pumps can do to keep her free, as her seams have begun to open. She will be dry-docked at Detroit. The

some calking; the schooner Ford River some repairs. The steam yacht Lomax is having 10 feet added length put in amidships.

WEST SUPERIOR.—The Christopher Columbus has been in the American Steel Co.'s dry-dock, receiving a new wheel, of solid pattern, new sea valves, and other slight repairs. The Adelia Shores has had her decks recalked. Some of the Inman tugs will go in for an overhauling. The Aberdeen is at the Sault, not badly damaged considering her rough experience.

MANITOWOC.—As the Goodrich liner Atlanta is a bit cranky, especially when well freighted on deck, it has been decided to give her bustles or false sides during the coming winter. The work will be done in the stationary drydock here. Capt. William Nicholson says that in her present shape the Atlanta is the best heavy-weather steamer he ever rode on, and he attributes this good quality to her crankiness. But it is necessary that she should bear up well under the burden of a deckload of freight, and therefore the bustles have become indispensable. Leathem & Smith, of Sturgeon Bay, will also have the Fountain City drydocked here during the winter for bustles or false sides, in order to improve her as a lumber carrier. It is possible that something may be done also to hold up the stern of the steamer abaft the reach of the arches.

BUFFALO.—The steamer Germanic and schooner Monitor had leaks stopped at the Union drydock. The Westford got a new wheel and repairs to her rudder. The steamer Marion was in Mills' dock for a new wheel and repairs to her stem. The Wotan had her stern-bearings repaired.

AN EXULTANT ENGINEER.

The steamship Globe is noted among lake craft for her large boilers. That plenty of steam is a good thing to have in times of high freights is shown by the following letter:

ASHLAND, WIS., OCT. 21, 1895.

MR. ROBERT HAY, Cleveland:

Dear Sir and Friend:—The size hat I wear is 7¼. You need not be in a hurry about getting it; any time after I get home will do. I gave poor Steve Miller, engineer of the Mariposa, one of the worst beatings he ever got in his life. I think I took all the conceit out of him. He rounded Whitefish Point 40 minutes ahead of us. I beat him ten miles to Keweenaw Point; I passed him before he got to Standard Rock; went by him like throwing your hat by a stump. We also ran the Western Line flyer, the Harlem, out of sight in four hours. There were over twenty boats, all fast ones, wind-bound at the Soo.

Among them were the Harlem, Castalia, Codorus, Zenith City, Mariposa, Kearsarge, Corona and others too numerous to mention. We were the last to get under way. You ought to see us do them all up. It was fun by the barrel. I think the Corona can beat the Mariposa; we found her harder to beat than the Mariposa. That king of all bags of wind from Sandusky, Baldie Lawrence, engineer of the German, was talking in Ashtabula about how he was going to do the Globe up. He left Ashtabula at 5:30 a. m. and we left at 6:35 a. m. I went by him at Marine City the same as the North Land would go by us. When I got up at 6 a. m. next morning we could not even see his smoke. I got my grates aboard at Ashtabula all right. Write me if you meet Miller.

FRED. M. HARMON, Engineer Stmr. Globe.

MAY GO TO THE COAST.

Capt. Alexander McDougall, general manager of the American Steel Barge Co., is looking over the St. Lawrence River canals, and obtaining data on which to figure with New York and Philadelphia companies, two or three of whom have been making offers for the Christopher Columbus and asking that a price be put upon her, delivered at New York. Nothing definite can be decided upon until Captain McDougall can learn just what it will cost to cut the Columbus in two and take her down to Montreal.



SCHOONER TYRONE IN THE CLEVELAND DRY-DOCK.

total cost of wrecking and repairs will exceed \$25,000.

CHICAGO.—At the Chicago Ship Building Co.'s shipyard the steamer Madagascar was in dock for repairs to steel chord and part of a new chord on the port side; also some new stringers and rail and recalking inside and out. The schooners Nassau and George A. Marsh had their bottoms calked.

At Miller Bros.' shipyard the steamer Fred Kelley was in dock for repairs to her stern bearings and some re-calking; the steamer John Duncan for re-fastening her wheel; the fire boat Fire Queen for some calking; the steamer I. N. Foster, for some new plank on her bottom and repairs to stern bearing.

At J. W. Bates & Co.'s shipyard the steamer City of New York received some new stanchions, stringers covering board, nail and bulwarks; the schooner Southwest some new plank inside and some calking; the steamer City of Cleveland some calking on her deck; the schooner W. B. Ogden a new rudder stock; the schooner Naiad a new cathead, and had her center board box calked. The schooner Felicitous received a new windlass; the barge Middlesex some calking; the steamer J. H. Prentice had her center board box calked and received some minor repairs. The schooner Halsted had her decks calked, and the barge William Grandy received some calking; the steamer M. T. Green some minor repairs; the steamer I. W. Stephenson

THE WILLARD SAFETY WATER-TUBE BOILER.

(ILLUSTRATED.)

Charles P. Willard & Co., of No. 197 South Canal Street, Chicago, have begun the manufacture of a water-tube marine boiler built entirely of steel. The boilers at present put upon the market are of small size, suitable for yachts, but the firm builds larger sizes to order. This firm manufactured the Roberts Safety Water-Tube Boiler, already well and favorably known on the lakes. During this time they were making experiments with steam generators of their own, as a result of which the Willard boiler was invented and placed upon the market. In justice to the manufacturers of both boilers it should be said that beyond the fact that both are pipe boilers of rectangular formation, they bear very little resemblance to each other.

One of the merits claimed for the Willard boiler is that it belongs to the class of tubulous boilers in which the distance between the steam generating surface and the steam space is short and very direct. Enlarged sizes of pipe are also used, in the belief that from a desire to keep down the weight of the boiler many boilers are provided with too limited water space. "We do not believe," say Willard & Co. in their circular, "that any steam generator in which the entire quantity of water in the boiler is converted into steam every five minutes can be either a safe, satisfactory, or economical one for use in a steam yacht or launch."

A special quality of extra thick re-drawn pipe is used. This is drawn down by means of a die (just as wire is drawn) from the next larger size. This entirely eliminates all traces of a weld and renders the pipe practically seamless. This pipe, it is claimed, is perfectly safe at a pressure of 800 to 1000 pounds to the square inch.

In speaking of the Willard as a steel boiler, it should, perhaps, be emphasized that not only are the tubes of steel, but all other material—the pipe, of all sizes, the special elbows and tees, the steam drum, the pressed steel flanges. The space at the rear of the boiler, which in some makes is filled with fire-brick, is in the Willard boiler nearly a solid wall of water-filled pipes connecting with manifolds over the fire, thus economizing the heat and reducing the loss by radiation. The entire casing of the Willard boiler is lined with asbestos.

In the Willard boiler, the side manifolds enter the drum above the water line, thus insuring a ready separation of steam from the entrained water. Enough pipes, however, enter at the bottom, in addition to the two large down-flow pipes, to insure cleanliness and freedom from sediment at the bottom of the drum, and to avert the possibility of burning the drum by accumulating mud. Owing to the absence of anything except short lengths of pipe, all sediment, mud, and scale finds its way readily into the water-leg surrounding the bottom of the boiler, and from thence it is easily removed through blow-off or sludge-cocks, with which each boiler is fitted.

The very large amount of grate surface which is afforded in the Willard boiler, practically the entire size of the boiler, permits the use of wood in long lengths or any low-grade quality of fuel, a feature which will be appreciated by those who are using boats where they are compelled, from the uncertainty of the fuel supply, to use wood and coal alternately.

SHIPBUILDING IN THE UNITED KINGDOM.

From the returns compiled by Lloyd's Register of Shipping it appears that, excluding war-ships, there were 356 vessels, of 716,575 tons gross, under construction in the United Kingdom at the close of the quarter September, 30, 1895. The particulars of the vessels in question are as follows, similar details being given for the corresponding period in 1894 for the purpose of comparison:

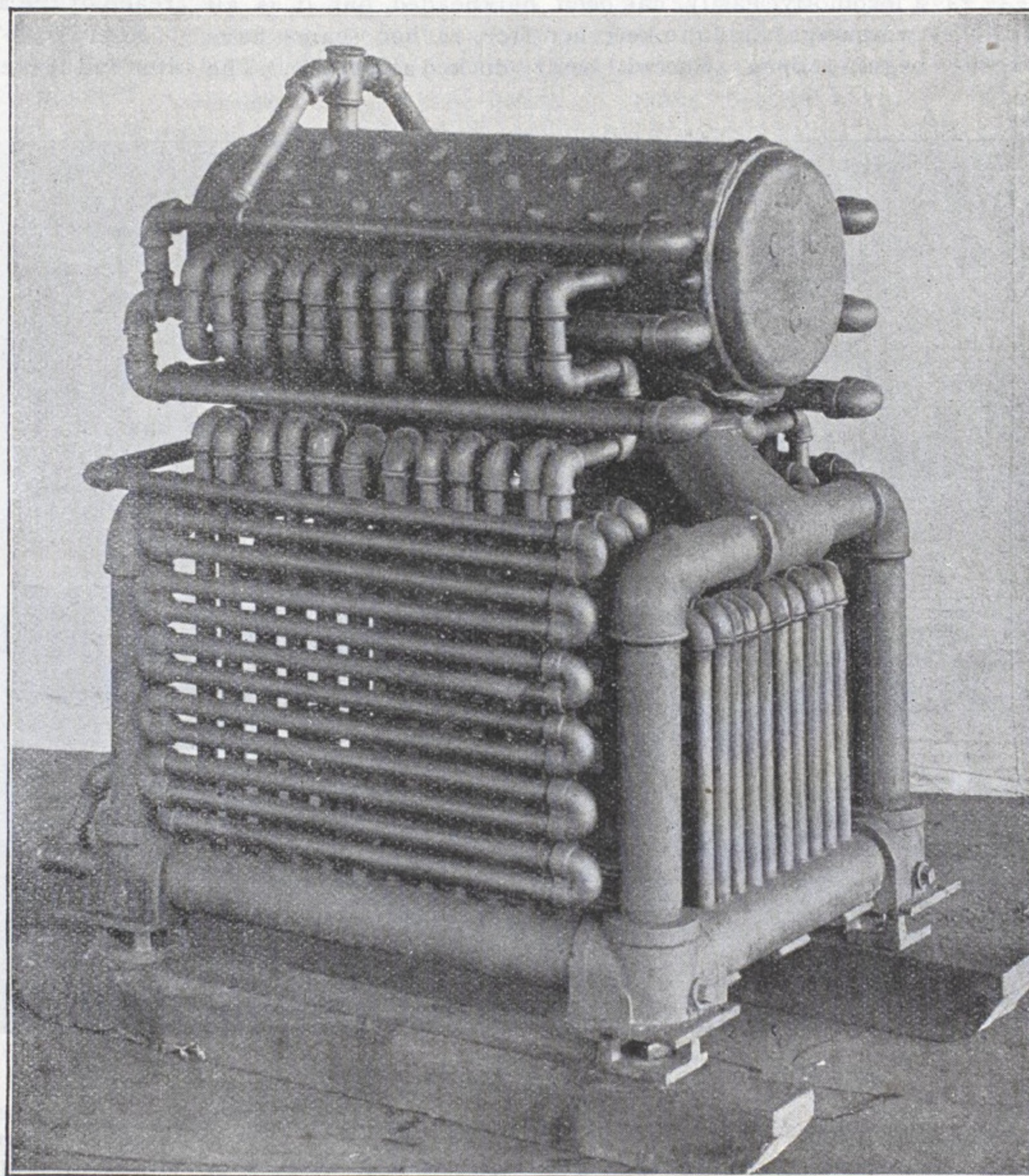
It will be seen that the present figures exceed those

reported twelve months ago by about 63,000 tons. As compared with last quarter, the steam tonnage in hand has increased by 16,000 tons, while a reduction of 7,000 tons has occurred in sailing tonnage.

DESCRIPTION.	30th September, 1895.		30th September, 1894.	
	No.	Gross Tonnage.	No.	Gross Tonnage
STEAM.				
Steel	282	684,509	255	611,619
Iron	27	4,118	24	5,331
Wood and Composite..	5	372	4	377
Total	314	688,999	283	617,327
SAIL.				
Steel	23	25,307	21	33,190
Iron	1	226	1	225
Wood and Composite..	18	2,043	22	2,589
Total	42	27,576	44	36,004
Total Steam and Sail.	356	716,575	327	653,331

IRON AND STEEL FOR SHIPBUILDING.

Shipowners across the water have some misgivings about the durability of steel steamers. The rapid substitution of steel for iron in shipbuilding has been one of the most marked features of the industry in recent



REAR VIEW OF BOILER WITH JACKET REMOVED.

years. Last year the returns showed that there was not a single vessel of any considerable size that was not built of steel, unless she was intended for some particular purpose. Yet experience is proving that steel is a much more perishable material than iron, especially where it cannot be frequently painted; and some owners find steel vessels five years old are not in such good condition as iron ships three times that age. It seems improbable that there will be any marked return to iron as a shipbuilding material, but the rapid deterioration of steel is a fact with which builders and owners will have to grapple. Either the plates, frames and other structural parts will have to be painted inside and out with some anti-corrosive that counteracts this deterioration, or a solution must be found in alloying steel with some metal that will make it less susceptible to the action of air and water.

A FINE KEROSENE YACHT.

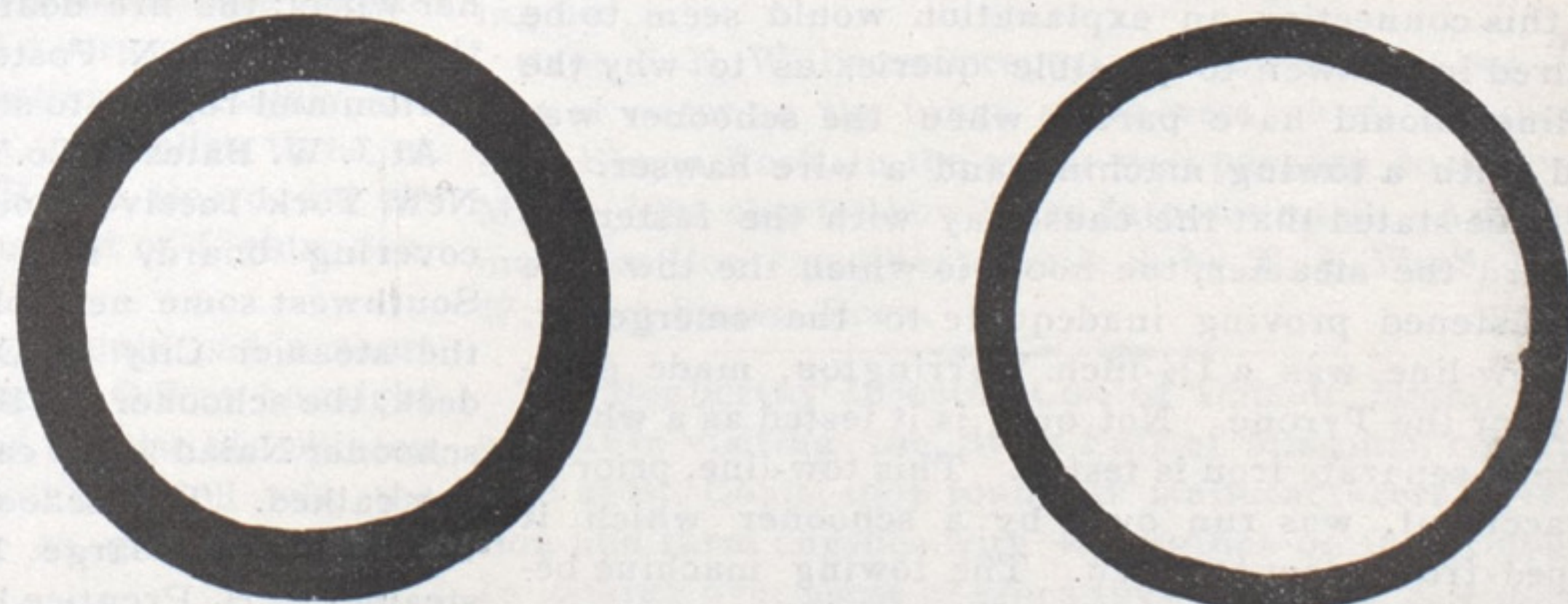
Mr J. M. Killey, of Hamilton, Ont., describes in the Canadian Engineer a handsome kerosene yacht, or launch, that has appeared on Hamilton Bay, the property of Messrs. Robert and John Moodie, of Hamilton, and purchased by them from the Scintz Yacht and Motor Co., of Grand Rapids, Mich., builders of both boat and machinery.

The hull is 16 by 4 feet, with 2 feet 6 inches draft, is built of cedar and elm, carefully polished and varnished. There is no visible means of propulsion, save a small box-like motor near the stern, which stands level with the rail. The motor is an excellent piece of mechanical work, having improvements, in Mr. Killey's judgment, of the most important character. While nearly all other motors have a power impulse at every other revolution only, this one has an impulse at every revolution, developing the same power with one cylinder that others do with two cylinders, and the consequent complication of parts. The machinery is of the very simplest character, the only parts in motion being the piston, connecting rod, and crank attached to the propeller shaft, and a small pump worked from an eccentric, to pump water

from outside the boat to cool the power cylinder, and adapted for use in pumping out bilge water. There are no valves nor valve motion in connection with the distribution of the vapor, etc., from the motor; the piston does the whole of this work in the most simple manner. One casting forms the cylinder and the close case in which the crank and connecting-rod operate, these occupying no more space than is necessary for their motion. The vapor and air are drawn into this part by the motion of the piston; it is compressed to perhaps 4 or 5 pounds above the atmospheric pressure. As the piston passes down, it uncovers a port above it and lets a portion of this mixed vapor above it into the upper part of the cylinder; this drives out the waste products of combustion left from the down or power stroke, but not the mixture introduced. The compression immediately closes the exhaust valve, while the compression of the vapor in the cylinder is still increased until the moment the crank turns the upper centre, when an electric spark from a simple primary battery explodes the vapor, and thus gives out its power. The motion of the eccentric working the pump brings about the electric contact, giving the spark at the proper moment of time.

The oil tank is in the bow of the boat, not visible, the quantity required to run the boat per hour being about one pint, the speed being about 7 and 8 miles per hour. The motor handles with the greatest facility; can stop, start, go slow, go full speed. The boat can also be backed up with the greatest facility without stopping the motor. The motor runs from 600 to 800 revolutions per minute, as nearly as could be ascertained. It also runs practically noiselessly and smoothly, and there is no perceptible odor from the oil.

If Congress refuses to grant an appropriation to im-



REDRAWN PIPE AS COMPARED WITH ORDINARY PIPE, SAME SIZE.

prove St. Joe harbor, steamboat companies trading there will do the necessary work at their own expense.

ON THE COAST.

Secretary Herbert has signed the contract awarding two torpedo boats to the Herreshoffs. He is expecting to sign the contract for the third boat just as soon as the report is received in regard to the ability of Moran Bros., at Seattle, to build the craft.

A new ferryboat, larger than any that now plies between the two cities, will be added on June 1 next to the Pennsylvania R. R.'s fleet. The contract was awarded on the 9th inst. to the Nixon Co., whose yards are at Elizabethport, N. J. The boat is to be 108 ft. long, with a breadth of beam of 55 ft., and will be equipped with propellers at both ends.

There is now on the stocks at Cramps' shipyard, near the Iowa, the frames of what will be the most powerful ocean tug afloat. She will be 150 feet long and is for the Philadelphia & Reading R. R. Co., to be used in towing coal barges between here and Boston. In building this tug the Reading Co. is making an entirely new departure. Heretofore they have built steam barges, capable of towing one or two others and at the same time carrying a cargo themselves. The new tug will carry coal only for her own use, but will be able to handle three big barges under almost any sort of weather conditions.

Secretary Herbert is now considering the recommendations made by Chief Naval Constr. Hichborn and Engr-in-Chief Melville in regard to the awarding of contracts for the construction of the six composite gun-boats authorized by the last Congress. It is understood that the board recommended that two twin-screw boats be awarded to the Detroit Dry Dock Co., and one single-screw boat to the Union Iron Works. The remaining three boats are to be distributed among the Bath Iron Works, Lewis Nixon and Dialogue & Son.

A proposition was submitted recently at Nassau, Bahamas, by R. W. Parsons, of New York, and H. M. Flagler, for a southern steamship service during the coming winter between Florida and the Bahamas. It is proposed to put on a first-class passenger steamship, which will make weekly trips between Lake Worth, Fla., and Nassau, during January, February and March. The distance between these two points is 150 miles, and the time guaranteed is 12 hours. A subsidy of £1,000 is asked for from the colony. The legislature, at informal meeting, accepted the proposal and no doubt the service will be established.

Five millions of tons of shipping are required to carry American foreign commerce annually. Of this we have now under the American flag a half million tons. An expenditure of \$300,000,000 would be necessary to build the ships to enable us to carry our own commerce and \$50,000,000 per year or more to renew and repair them. This would be a great boon to the steel manufacturers, for nearly all the hulls of the ships as well as the machinery of all the vessels of the present day are made of steel, however, variously fashioned. The stimulation of American shipbuilding is therefore of vital interest to our steel manufacturers.—American Shipbuilder.

The Navy Department is expected to issue within the next few days plans and specifications for the two prospective battleships. There are five firms who will be supplied with these papers, Cramp & Sons, Union Iron Works, Newport News Shipbuilding Co., Bath Iron Works and the Columbian Iron Works. The plans contemplate Scotch boilers, but the firm's plans include coil boilers. The Engineer-in-Chief pleads for 11,000 h. p., but the Department has cut him down to 10,000 h. p. The machinery will be slightly smaller in many respects than that of the battleship Iowa, now under construction, but will be very similar to it.

Messrs. A. C. Wells & Co. have introduced a heater designed for use on shipboard for straightening bulged or collapsed plates. This consists of a burner very similar to that used in the ordinary Wells light, but supplied with three generating chambers, and so arranged

that the flame can play either in a vertical direction or at any angle as required. These heaters have already been adopted by the Cunard Company, and several of them were used a short time back in effecting repairs on the Campania. A ½-inch plate has, by means of these heaters, been heated up almost to a white heat in the course of from fifteen to twenty minutes.

The great strains to which the propeller shafts of large steamships are subjected was illustrated by some measurements taken on a certain steamer, by which it was found that in a heavy confused sea, with the ship heavily loaded, a maximum deflection of 1¼ inches in 112 feet occurred repeatedly. The greatest deflection took place when the stem was elevated and the crest of the wave nearly amidships. Railway Engineering and Mechanics says that these measurements taken on the shaft itself were confirmed by measurements of the deflection of the decks. The vessel's frames were strengthened, and then the breakage of her shafts, which had been frequent, wholly ceased.

Wholesale desertions of sailors from vessels engaged in the coasting trade have prevented several schooners from preceding to sea, despite the fact that the men

with lag screws from under side of deck timbers.

The first 30-knot torpedo-boat destroyer, ordered in May last by the Admiralty for the British Navy, was sent afloat on the 24th of September from Messrs Laird Brothers' works at Birkenhead, 88 working days after the laying of her keel. Her sister ships, lying in close proximity, are growing quickly. The new vessel was named the *Quail* by Mrs. William Laird, and placed in one of the graving docks to receive her machinery and be otherwise completed. The *Quail* is the largest and perhaps the most complete boat of her class yet designed, and, irrespective of her speed, she will have great power of endurance, and will carry coal enough to steam at a moderate speed to the Mediterranean, or even, if need be, across the Atlantic.

The shipbuilding outlook in the Northeast of England is distinctly healthy and indicates a better position of the industry than has been experienced almost for years. With the exception of two yards, which have been closed from private considerations for nearly a couple of years, every establishment on the Tyne is more or less actively employed; on the Wear all the yards are working, and so are those on the Tees and at Hartlepool; while even smaller centres like Blyth and Whitby, which have keenly felt the late depression, are now inactive operation. The inquiry for new tonnage is fair, despite the wretched state of the freight markets, and a good deal of work is being weekly booked.—The Steamship.

ELECTRIC LIGHTING FOR BUOYS.

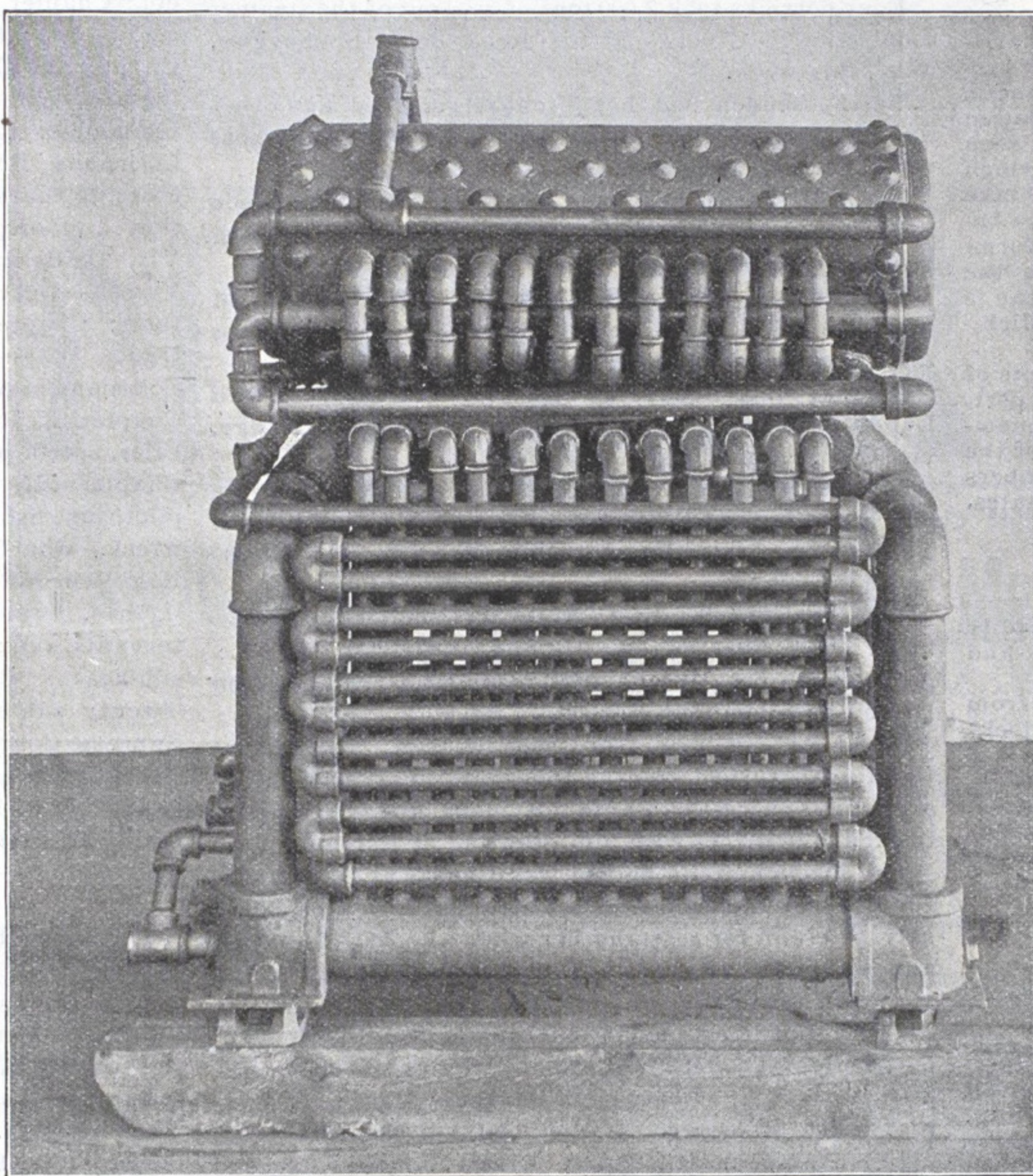
Engineering describes the method used for marking the Gedney channel into New York by electric lighting, which has now been in force for some few weeks. The power station is situated at the point of Sandy Hook, and cables are laid from thence to the buoys, which are of the pole type and about 60 or 70 feet long. The buoys are moored by ordinary cast-steel mushrooms weighing about 5,000 lbs. The results obtained by experiment have been so satisfactory that it is the intention of the commissioners to extend the system. Continuous and alternating currents are used. The alternating current is required for the illumination of the buoys in the Gedney channel and to light the lamp in the Hook Beacon, a lighthouse at the extremity of Sandy Hook. The continuous current is now used to light the buoy on the south-west spit, which form the south corner of Flynn's Knoll. The alternating current has a frequency of 40 cycles per second, the generator revolving at 1,200 revolution per minute. The total length of cable is 32,060 feet. Following on the success of this trial, we may be prepared to see in future a similar development on our own coasts, and it can hardly be denied that ample room exists for such improvement.—New York Maritime Register.

CORRESPONDENCE SCHOOL OF TECHNOLOGY.

The Correspondence School of Technology, Cleveland, is sending out a handsome souvenir catalogue and curriculum. As indicated by its title, the instructions are given entirely through the mails, enabling ambitious young men who are of necessity obliged to remain at some unremunerative work for the immediate support of themselves and those dependent upon them, to gain an education in scientific branches for which they have a decided taste. They are thus afforded a start in professional life that is of immeasurable benefit. The instructors are men of high professional standing, including E. P. Roberts, M. E., William H. Searles, C. E., Frank C. Osborn, C. E., James Ritchie, B. S., Oscar Antz, M. E., Frank H. Constant, C. E., F. T. Carlton, B. S., J. C. Gallup (secretary and treasurer), W. B. Stewart, L. G. Siebel, J. W. Richardson, and E. C. Cooke, C. E.

HYDROGRAPHIC CHARTS

Of Lakes Erie, Ontario, Superior, Michigan, Huron, and St. Mary's, St. Clair and Detroit Rivers, for sale at the office of the MARINE RECORD, No. 144 Superior street, Cleveland. Prices 75 and 50 cents each.



SIDE VIEW OF BOILER WITH JACKET REMOVED.

had come on board and agreed to man the vessels. Under the old law, after a seaman had once signed shipping articles and refused to work he could be arrested and imprisoned, but under the Act of Congress, approved Feb. 18, 1895, the master is helpless. A well-known ship broker, who is also a large vessel owner, says the new shipping law for sailors had demoralized the American shipping trade, as it gives the crews, not masters, charge of the vessels and everybody who has money invested is at their mercy.—Philadelphia Commercial List.

Messrs. Charles L. Seabury & Co., Nyack, N. Y., have entered into a contract with a New York yachtsman to build him a cruising steam yacht. It is to be 135 feet over all, about 110 feet on water line, 16 feet beam, 9 feet 6 inches depth and 7 feet draft. The hull will be composite-built, frames and reverse frames of angle steel, keelsons of steel, breast hooks of steel, diagonal straps of steel and fore-and-aft plates of same. The planking will be of yellow pine in two thicknesses. The fastenings will be of Tobin bronze through bolts. There will be four steel bulkheads. The rudder will be of bronze with steel shank properly protected from salt water. The deck will be of clear white pine fastened

NEWS AROUND THE LAKES.

CLEVELAND.

The 19th annual ball of the original Cleveland tug men will be given at Orpheus Hall No. 538½ Pearl street Monday evening, December 16. Blondin's orchestra will furnish the music.

Mr. Charles J. Snow has returned as a benedict to his desk with the Cleveland Ship-Building Co. He was married Oct. 10 to Miss Marie S. Knauff, of No. 410 Bolton avenue. They spent the first ten days of their honeymoon in Detroit and Toledo.

Smith's dredges are at work in the river, above Main street bridge.

The council adopted a city flag last Monday evening. It consists of three upright bars in solid colors, red, white and blue, upon which is a shield. The shield is crossed at the middle by the word "Cleveland" in large letters. The upper corners contain designs of an anvil and wheel, representing the manufacturing industries, and capstan and anchor, typifying the marine interests of the city. Below is a laurel wreath containing "1796" the date of the founding of the city.

One of the Cleveland Dredge Co's scows sank at the mouth of the harbor about 80 feet from the west pier, Tuesday. Vessels should keep well to the east side of the channel.

CHICAGO.

Special Correspondence to The Marine Record.

The Northern Michigan Line steamer City of Charlevoix, Capt. Wm. Finucan, after having had a very successful season in the passenger and freight business, was chartered by the Graham & Morton Transportation Co. from October 17th to December 1st, to run between Chicago and St. Joseph and Benton harbor, after which the Northern Michigan Line steamer Petoskey will take the place of the steamer City of Charlevoix and run between St. Joseph and Milwaukee. Capt. Griffin, formerly of the steamer Lawrence, is commanding the steamer City of Charlevoix, and Capt. Wm. Finucan is sailing the steamer Lawrence for the Northern Michigan Line.

The American Association of Masters and Pilots of Steam Vessels is becoming very popular at this port. Chicago Harbor No. 33 has recently added 25 new members to the association, and hopes soon to be one of the leading harbors of the association, which now numbers 47 harbors on the navigable waters of the United States.

DULUTH AND SUPERIOR.

Special Correspondence to The Marine Record.

The force of men at the Chandler mine is steadily increasing, and this mine, with the Pioneer, Zenith and Whiteside, will continue steadily at work.

Considerable annoyance has occurred this week from spontaneous fires in the coal on the northwestern docks at Allouez Bay, but it is thought that the loss so far has been inconsiderable.

The Oliver mine has ceased shipments for this season.

Capt. William R. Tibbals, supervising inspector, has confirmed the decision of the local inspectors in revoking the licenses of captains Ditzel and Brown, who are held responsible for the Medina-Pathfinder collision.

SAULT STE. MARIE.

Special Correspondence to The Marine Record.

Capt. R. H. Luckes, of Payment, has rebuilt the steamer Gazelle and brought her to this port Wednesday for inspection. The Gazelle is 78 feet long over all and has a 14-foot beam. She is licensed for river towing.

At the new lock the upper and lower gates are nearly ready for use. The work of bolting the upper miter sill was completed Thursday. It is expected that the lock will be filled with water, or partly filled, for the purpose of testing its workings, next week, when Second Lieut. J. B. Cavanaugh, who is at present in charge of the government work, will be present.

The Moiles line tug Gladiator was entirely destroyed by fire at Kemp's lower slip at 5 o'clock Thursday morning. The ferry Beckwith and the dock warehouse were also scorched. With the combined efforts of the city department and the tug Brockway, adjoining property was saved. Moiles Bros., owners of the Gladiator, had no insurance on the boat and the loss will be a severe one.

THE DEATH LIST.

Capt. James W. Condon, who for many years sailed vessels in the old Western Transportation and Lehigh Lines, died last week at the state hospital, Buffalo, aged 55 years.

Capt. H. M. Stanley died Sunday morning, October 13, of paralysis, at his home on Sherwood Point, Green Bay. He was the oldest light-keeper on Lake Michigan, and at the time of his death had charge of the Sherwood Point light.

Capt. David Evans, formerly in the revenue service on the lakes and captain of the cutter Andy Johnson, died Saturday morning at Berlin, Wis., of old age.

Capt. Evans was retired on half pay but a few months ago.

Capt. Thomas White, one of the oldest and for many years one of the best known vesselmen on the lakes, died at Sandusky Monday. Capt White was born in 1819. He first came prominently into notice nearly 40 years ago, when he fitted out the then big schooner William Pierson, which was built at Sandusky, and took her to Liverpool, with black walnut lumber, which was put aboard the vessel at Toledo. He remained abroad with the Pierson for a year.

FLOTSAM AND JETSAM.

Reports from Gladstone predict an extra heavy fall business.

Mackinaw City will bond itself for \$6,000 to build a merchandise dock.

Ashland ore shipments last week were 33,642 tons; for the season, 2,206,952 tons.

The schooner Nelson has been libeled for \$4,110.76 by the Grummonds on a wrecking bill.

The Canadian survey steamer Bayfield is being overhauled at Muir's dry-dock, Port Dalhousie.

Capt. John Pringle has succeeded his son Robert in the Australasia. The latter will go in the P. P. Pratt.

Four derricks took 2,000 tons of coal out of the steamer Louisiana in 17 hours at the Reiss dock, Sheboygan, Wis., this week.

The Fessenden had her lifeboat smashed and other damage done in Buffalo harbor by the Farwell, whose wheel chains had parted.

The J. B. Trevor has made fifteen round trips between Superior and Lake Erie ports so far this season towing two barges all the time.

The steamer Zenith City loaded 141,000 bushels of wheat on a draft of 14 feet 3 inches at Duluth, breaking the Lake Superior record by 1,000 bushels.

Capt. J. M. Kennedy, lately first officer of the North Land, has been appointed master of the S. F. Hodge, vice Capt. John Casson, resigned.

The Kelderhouse syndicate have been looking at the hull of the burned Fairbank, with a view of buying her. The owners, Carter Bros., of Port Colborne, want \$4,000 for the wreck.

The new Roberts' safety water tube boilers are being fitted in the river steamer Unique, at Detroit. It is expected that the Unique will resume her run between Detroit and Port Huron within a week.

Major Ruffner, Engineer Corps, U. S. A. stationed at Buffalo, has turned over the government engineer's office over to his successor, Captain Symons, and is preparing to exchange places with him, locating at Portland, Ore.

The schooner John Magee was libeled at Manitowoc for \$2,000 by the owners of the steamer S. S. Curry on a salvage claim for rescuing her when she was dismantled and nearly full of water. Her owners will allow the schooner to be sold.

The following appointments in the light-house service in Michigan were made to-day: Peter L. Richards, assistant keeper at Point aux Barques; Henry T. Luxton, assistant keeper at Charity Island; Nelson Abear, assistant keeper at Detour; Albert Johnson, second assistant at Passage Island.

It is regarded as practically settled that another ore dock will be built in Ashland during the coming winter. General Manager Whitcomb, Supt. Horn and Engineer Collins, of the Central, and several other parties were in Ashland inspecting the ore docks. The commercial dock will be repaired, remodeled and extended, and the ore dock will either be extended or a new dock will be built outright.

The master of the Philistine Ash charges the captain of the Philistine Richardson with not complying with Rule 5 of free booters' code, which means you must throw hot ashes to windward, then screech like a Sioux Indian on the war path when you meet another craft in the same business. Captain Bonnah made the same charge against Hendricks, of the Ash; both were summoned on the carpet in the stone house. Inspector Danger heard the case, gave it to them both where the chicken got the axe, and both of their official heads rolled into the basket. Capt. Hendricks will now get a wooden bill like a hen and peck in the barnyard before he will lay another complaint against a Philistine captain. He did not know it was dangerous to throw stones when he was in a glass house. They are both squaw men for 15 days now.—Port Huron Herald.

THE LAW OF MARINE COLLISIONS.

Under the above title appears a treatise upon the law governing the navigation of vessels upon the high seas and inland waters, and the rights and liabilities arising on account of collisions between vessels, by Herbert R. Spencer, of Duluth bar.

Mr. Spencer gives the rules governing the navigation of vessels upon the high seas and the inland waters of the United States, and treats clearly and exhaustively the principles governing their application in cases involving marine collisions and the general principles governing the liabilities of the parties to marine collisions.

Great care has been taken to make a thorough examination and exhaustive citation of cases. Foreign as well as American cases have been consulted. The book is not local and will be found to be useful throughout the English-speaking world.

The chapter headings are as follows: Chapter I, Jurisdiction of Admiralty—Federal courts, state courts, public vessels, private vessels, high seas, rivers, lakes, bays, straits and canals; Chapter II, Rules and Regulations—Powers of Congress, international rules, state rules, usage; Chapter III, Lights—Visibility, failure to see, defective light, various kinds of lights, burden of proof, etc.; Chapter IV, Navigation in Fog, Mist, or Falling Snow—Signals, speed, duty in navigating vessels; Chapter V, Collision Between Sailing Vessels—Steering and sailing rules, meeting end on, overtaking, crossing course, right of way, in stays, etc.; Chapter VI, Collisions Between Steam Vessels—Meeting end on, crossing course, overtaking, passing, damage by suction and displacement, signals, speed, etc.; Chapter VII, Collision Between Sailing Vessels and Steam Vessels—Duty of steamer, exception to rules, presumptions; Chapter VIII, Collisions Between Vessels Not Under Way—Twenty-three sub heads; Chapter IX, Collisions between Tug and Tows—Nineteen sub heads; Chapter X, River and Harbor Navigation—Inspectors' rules, speed, place in channel, usage, local regulations; Chapter XI, Miscellaneous Collisions—Small boats, pilot, tug, fishing, ferry and canal boats, collisions with wreck, wharfs and other structures; Chapter XII, Negligence in General—Lookouts, presumption of negligence, liability of ship, insufficient manning, fellow-servants, etc; Chapter XIII, Damages—Twenty-five sub-heads; Chapter XIV, Liabilities of Owners—Twenty sub-heads; Appendix—Admiralty rules of the Supreme Court of the United States. Pilot rules for the Great Lakes and their connecting and tributary waters, as far east as Montreal. It is published by Callaghan & Co., 114 Monroe St., Chicago.

NOVEMBER HARPER'S.

The November number of HARPER'S is distinguished by the strength and variety of its fiction. It opens with a brilliant short story by Brander Matthews, called "Men and Women and Horses." This story deals with the annual New York horse-show, and illustrations, true to the fashionable life represented, have been made for it by W. T. Smedley. In "A Pilgrim on the Gila" Owen Wister tells a tale of politics and highway robbery in Arizona. This almost true story is illustrated by Frederic Remington. Harriet Prescott Spofford gives a vivid picture of Washington life in "A Thanksgiving Breakfast," a tale appropriate to the season. "Plum-Blossom Beebe's Adventure," the second of Julian Ralph's stories of China, relates the unhappy fortunes of the native wife of an English merchant, and C. D. Weldon furnishes characteristic illustrations. Thomas Hardy's serial, "Hearts Insurgent," is completed. In the "Personal Recollections of Joan of Arc," illustrated by F. V. Du Mond, we have the story of the first battle in the capture of Orleans. The charm of fiction also pervades "Out of the World at Corinto," an account by Richard Harding Davis of his enforced stay last winter at the unfrequented Central American port. W. D. Howells' recollections of "Literary Boston Thirty Years Ago" include an appreciative view of that New England society which was conscious of possessing a national literature. Poultney Bigelow's "The German Struggle for Liberty" tells the story of Napoleon's suicidal invasion of Russia. In "Recent Impressions of Anglo-Indian Life" Edwin Lord Weeks describes with the aid of his own drawings a curious political and social situation as he recently observed it, and gives some timely comment on the silver question in British India. Charles Dudley Warner in the "Editor's Study" discusses a variety of present-day interests, and the "Editor's Drawer" of current humor contains a farce by John Kendrick Bangs called "The Bicyclers," with illustrations by Edward Penfield.

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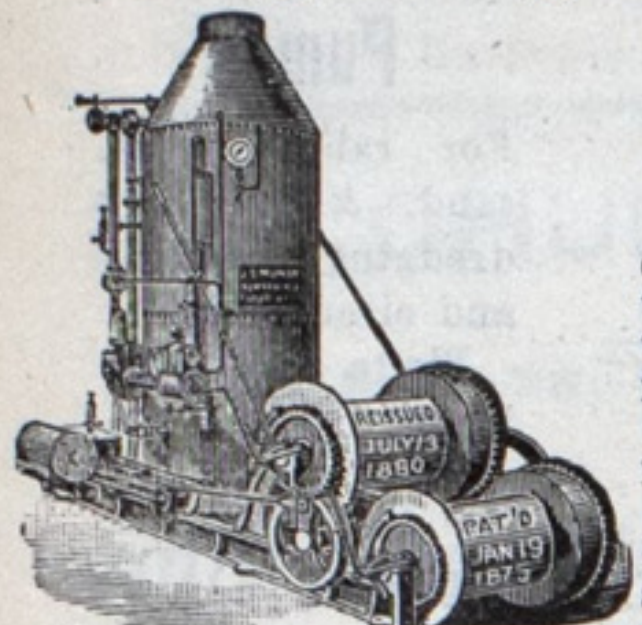
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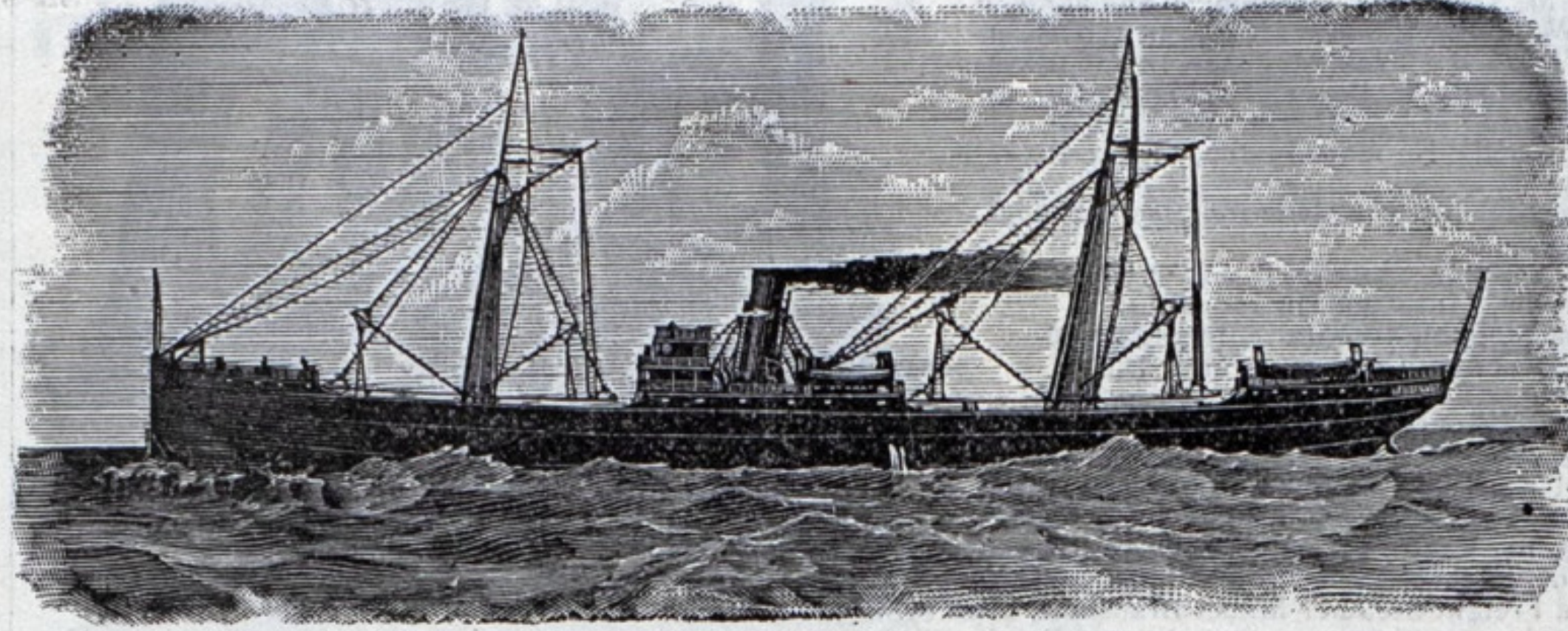


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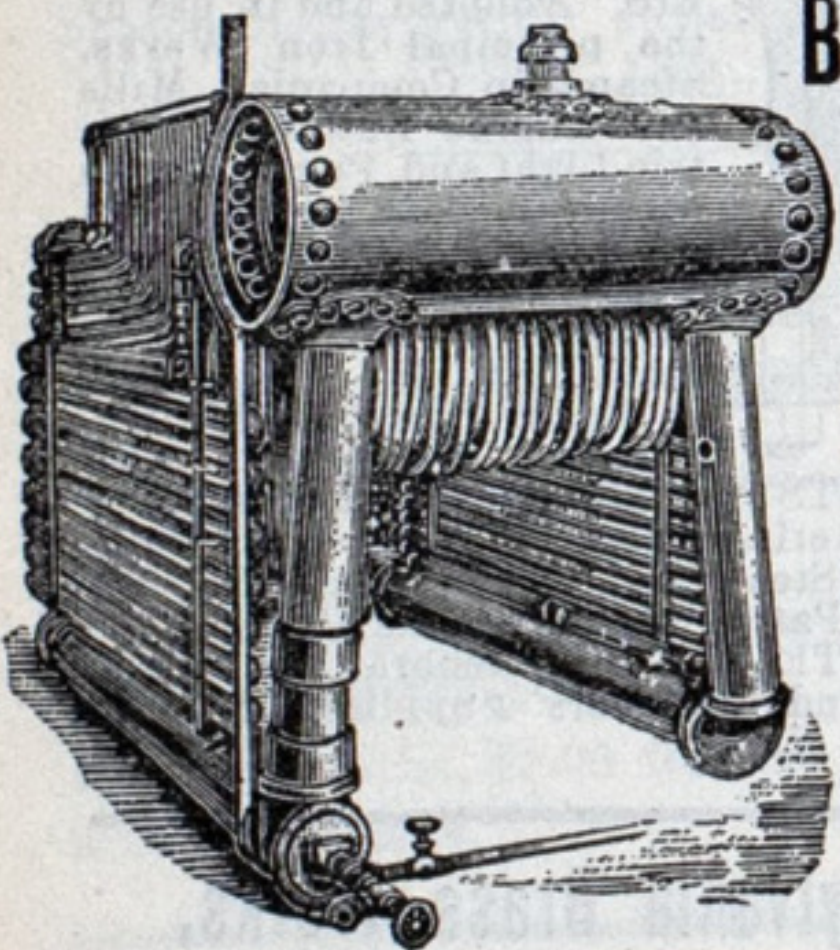
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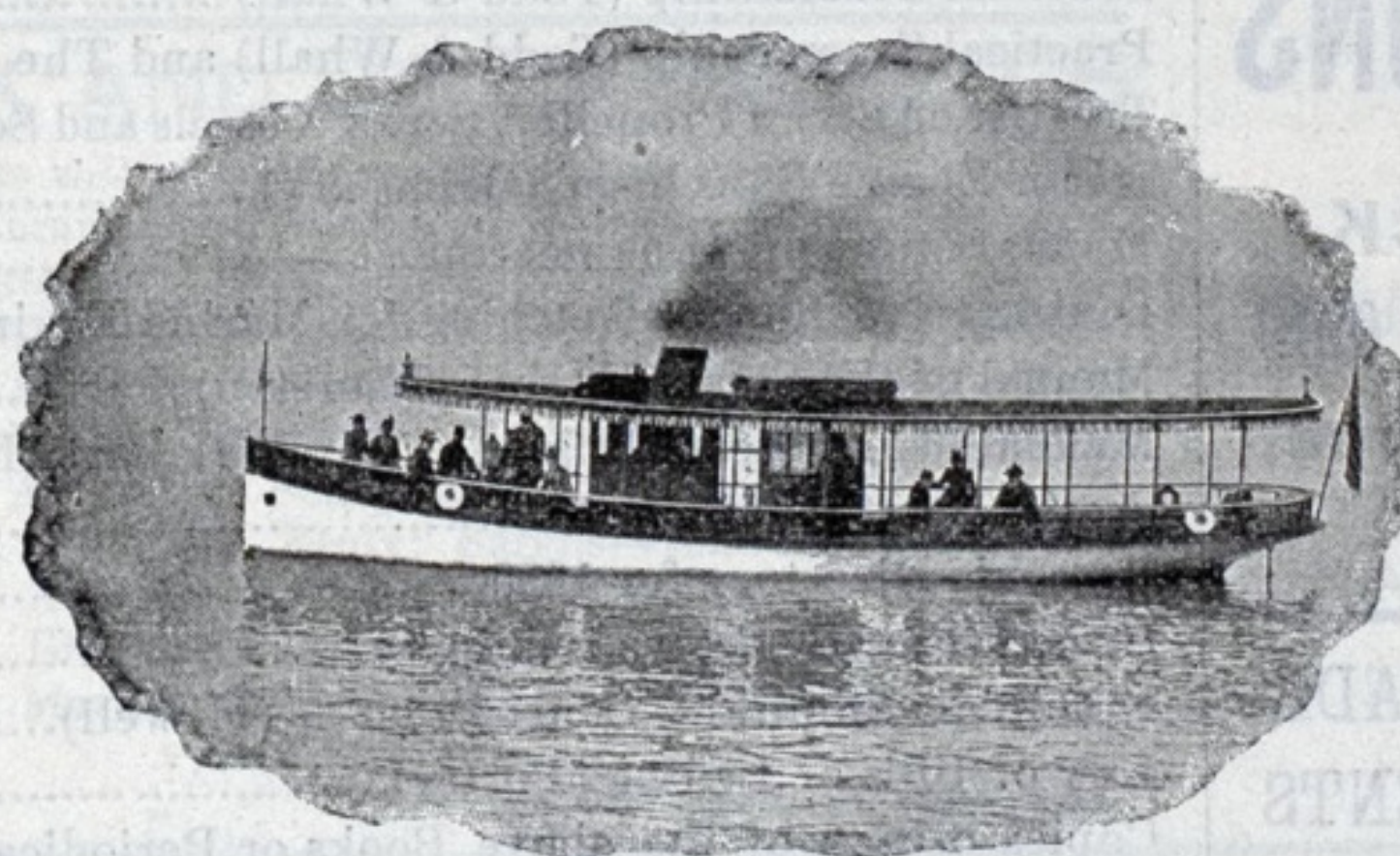
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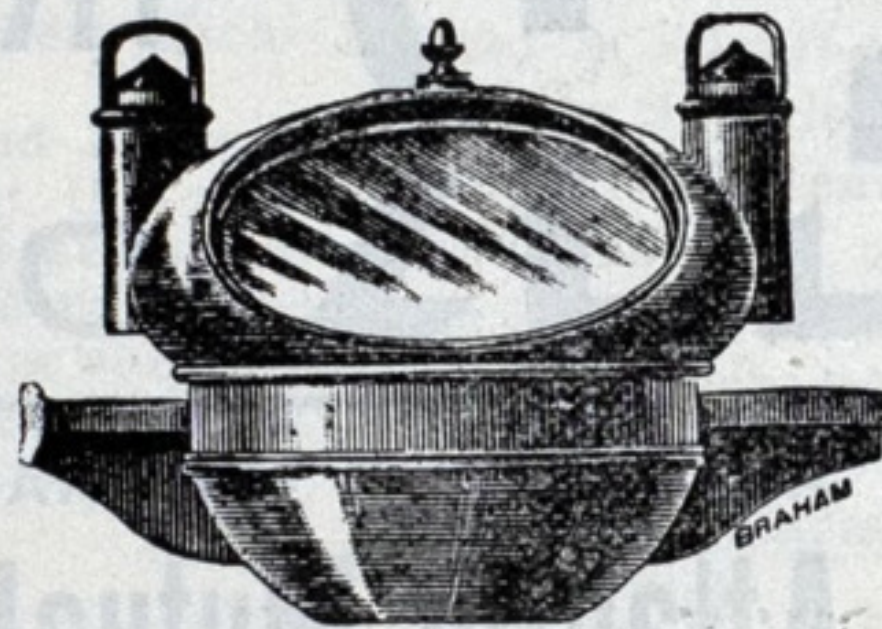
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Steamer Lorain L. South Haven, 12 and 21x16.
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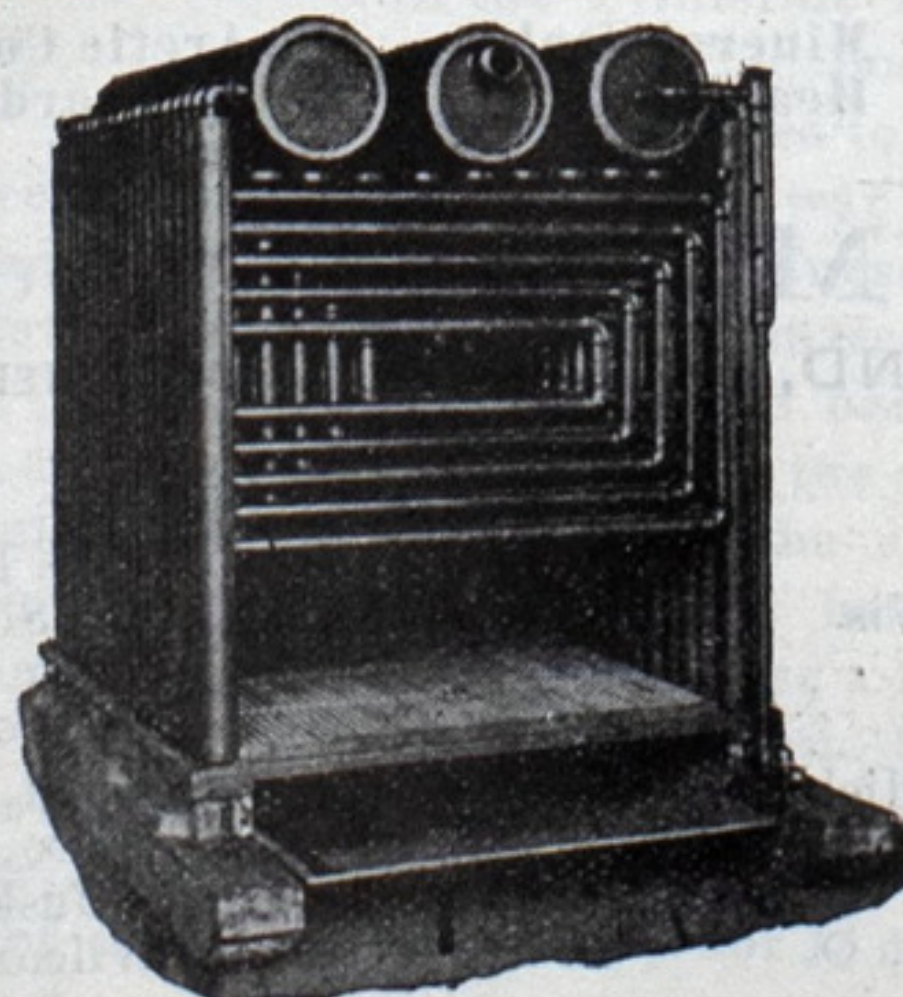
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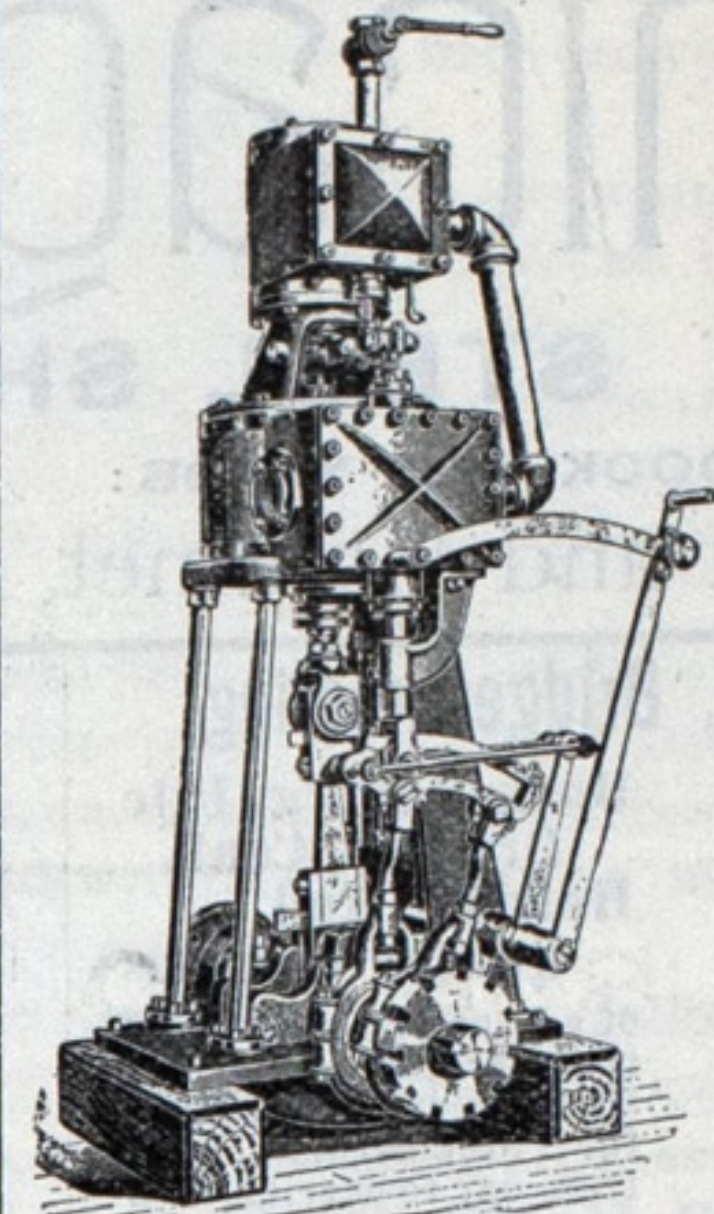
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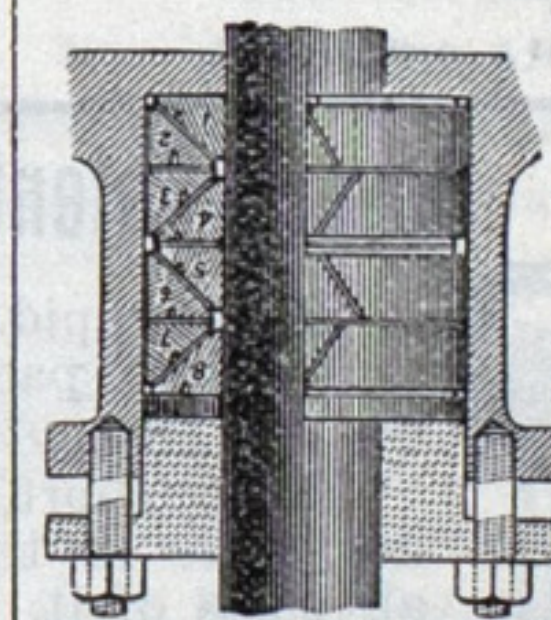
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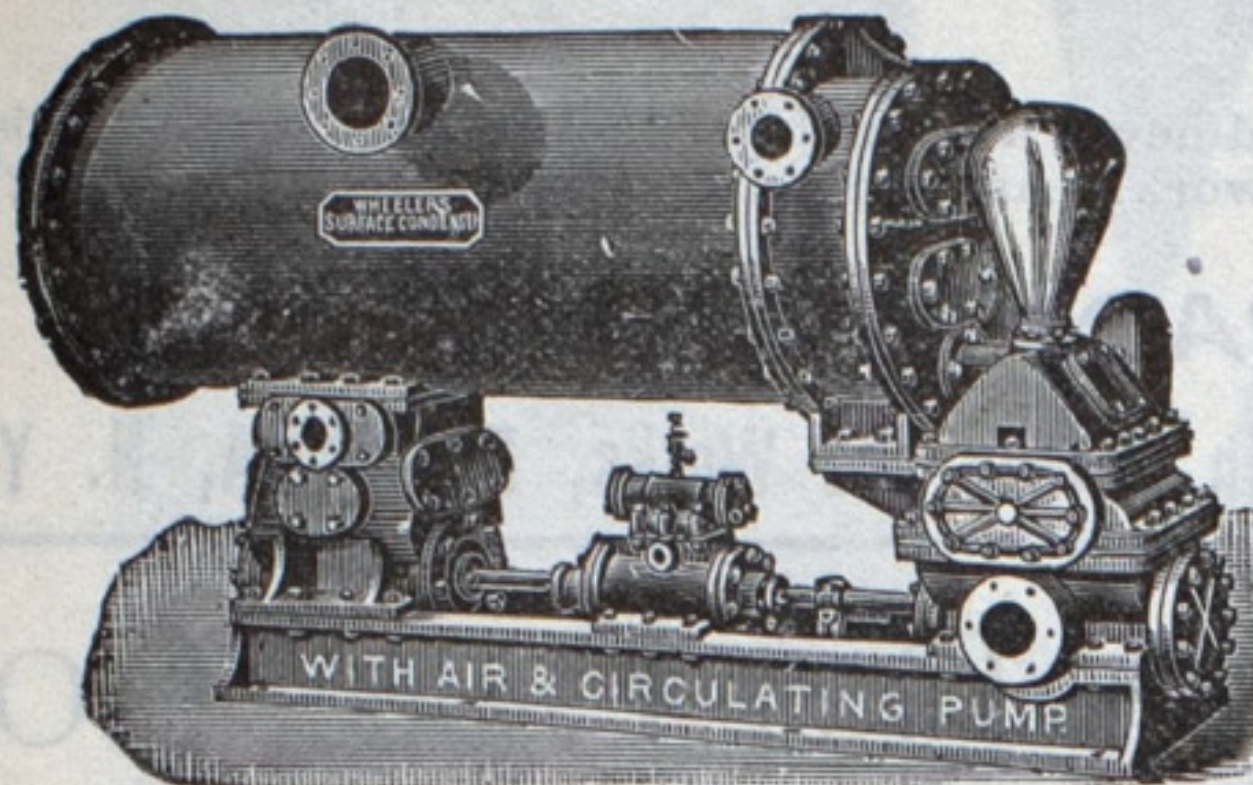
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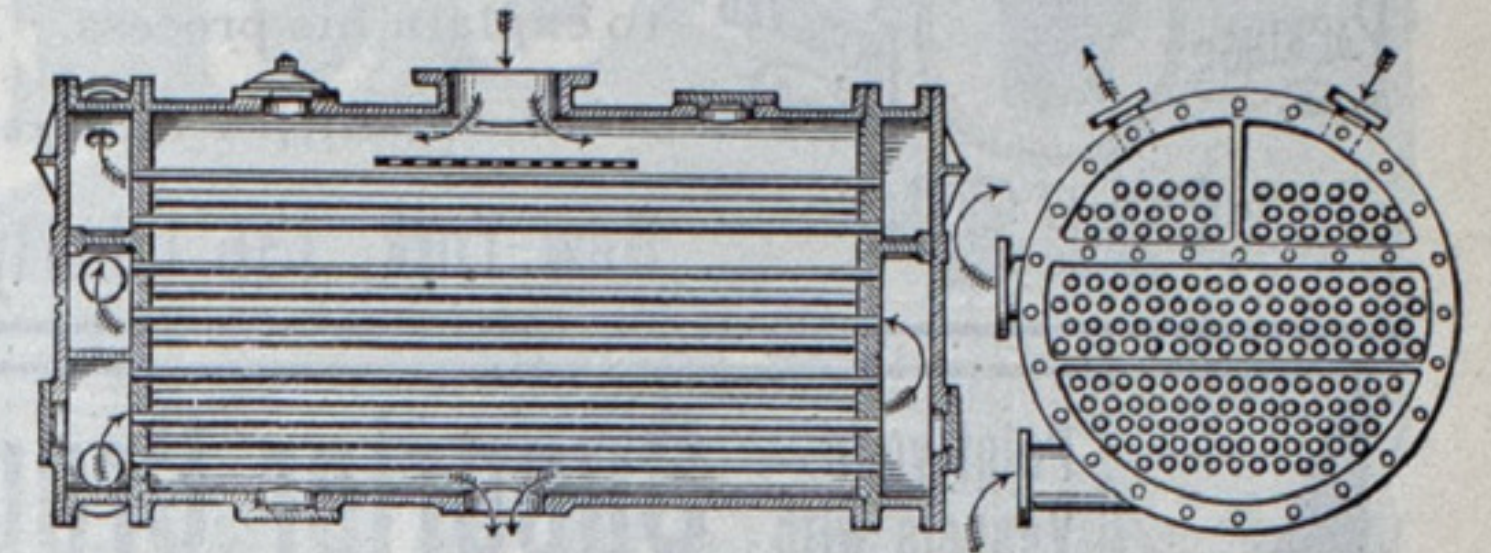
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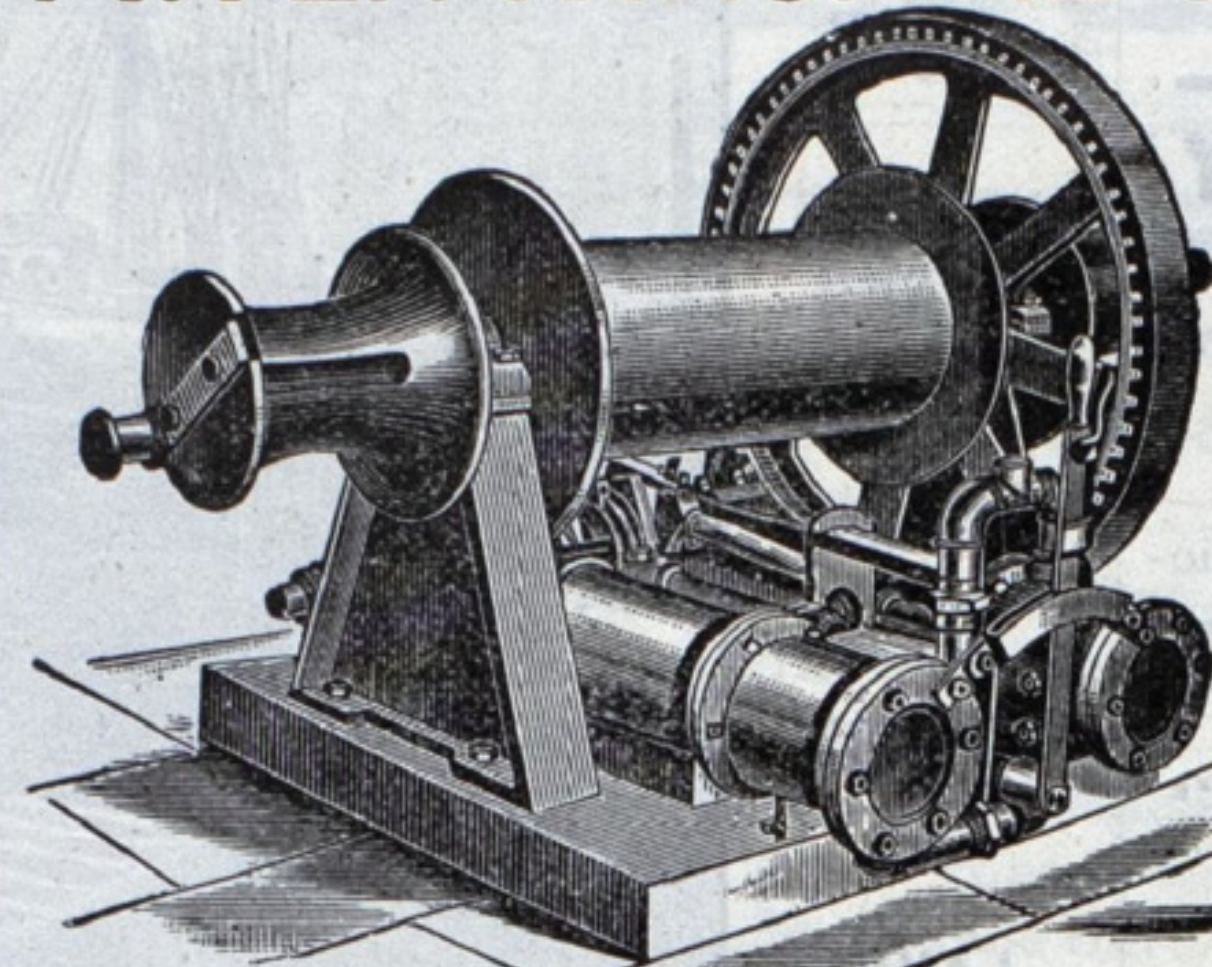
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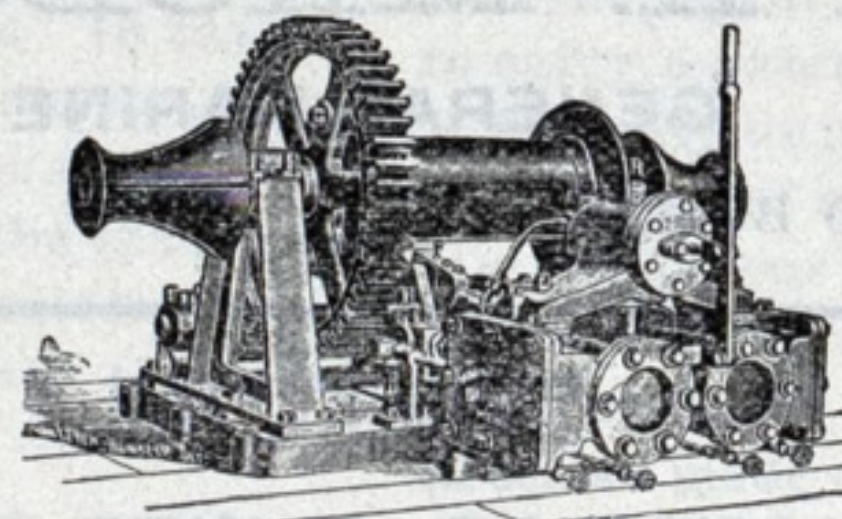
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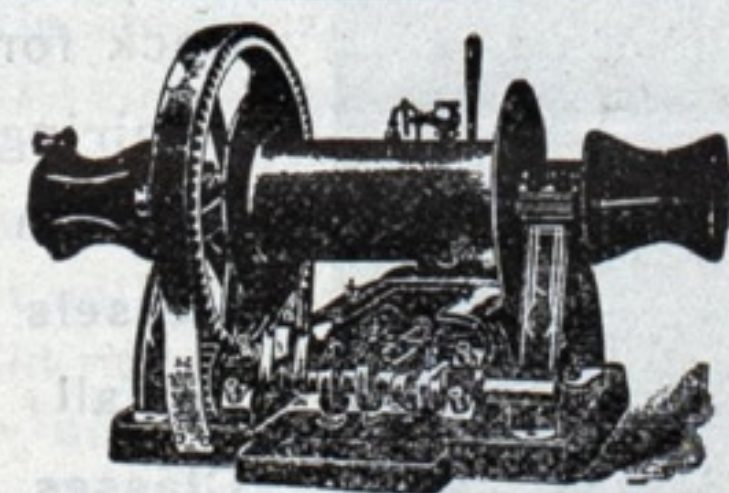
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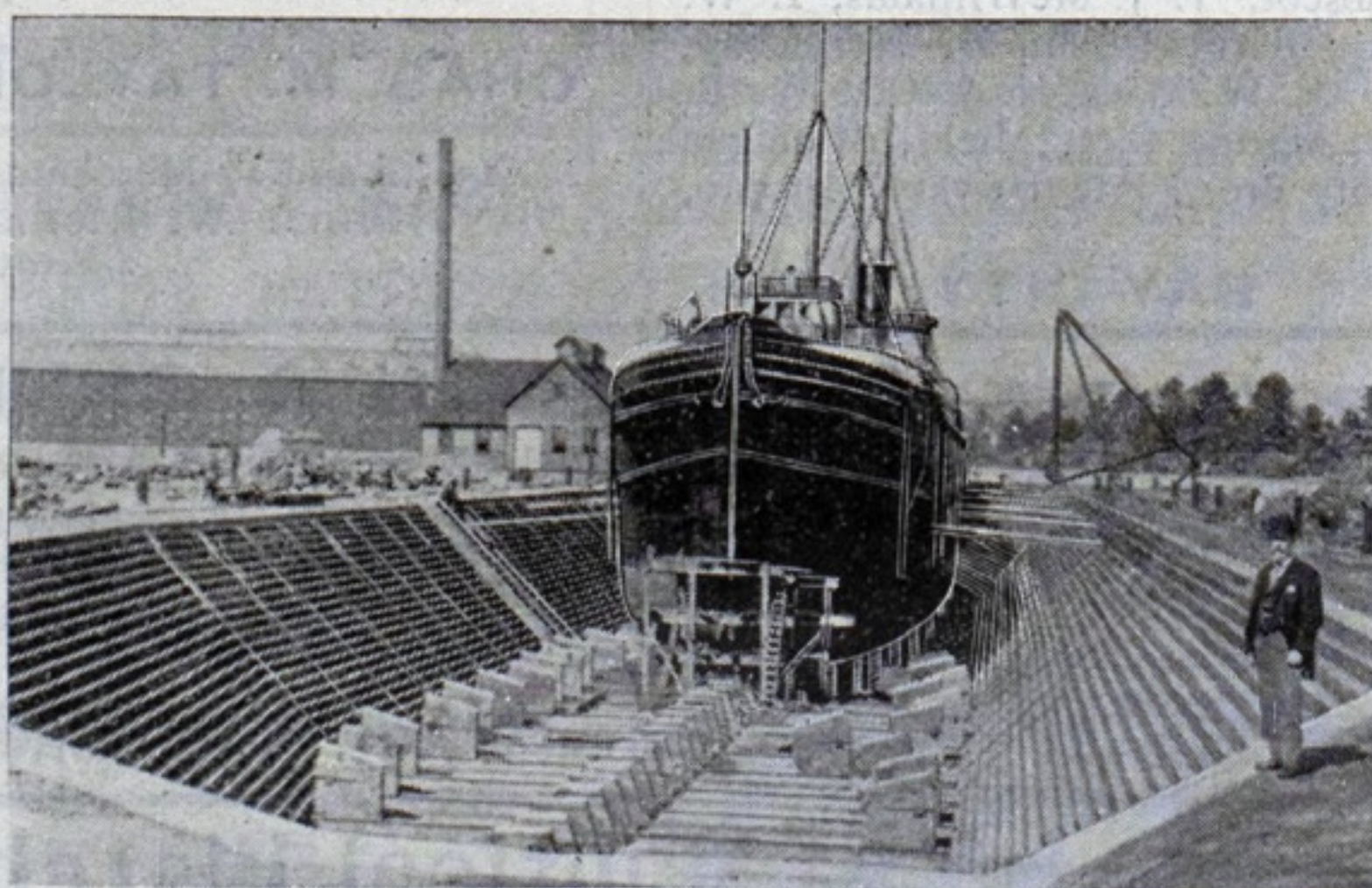
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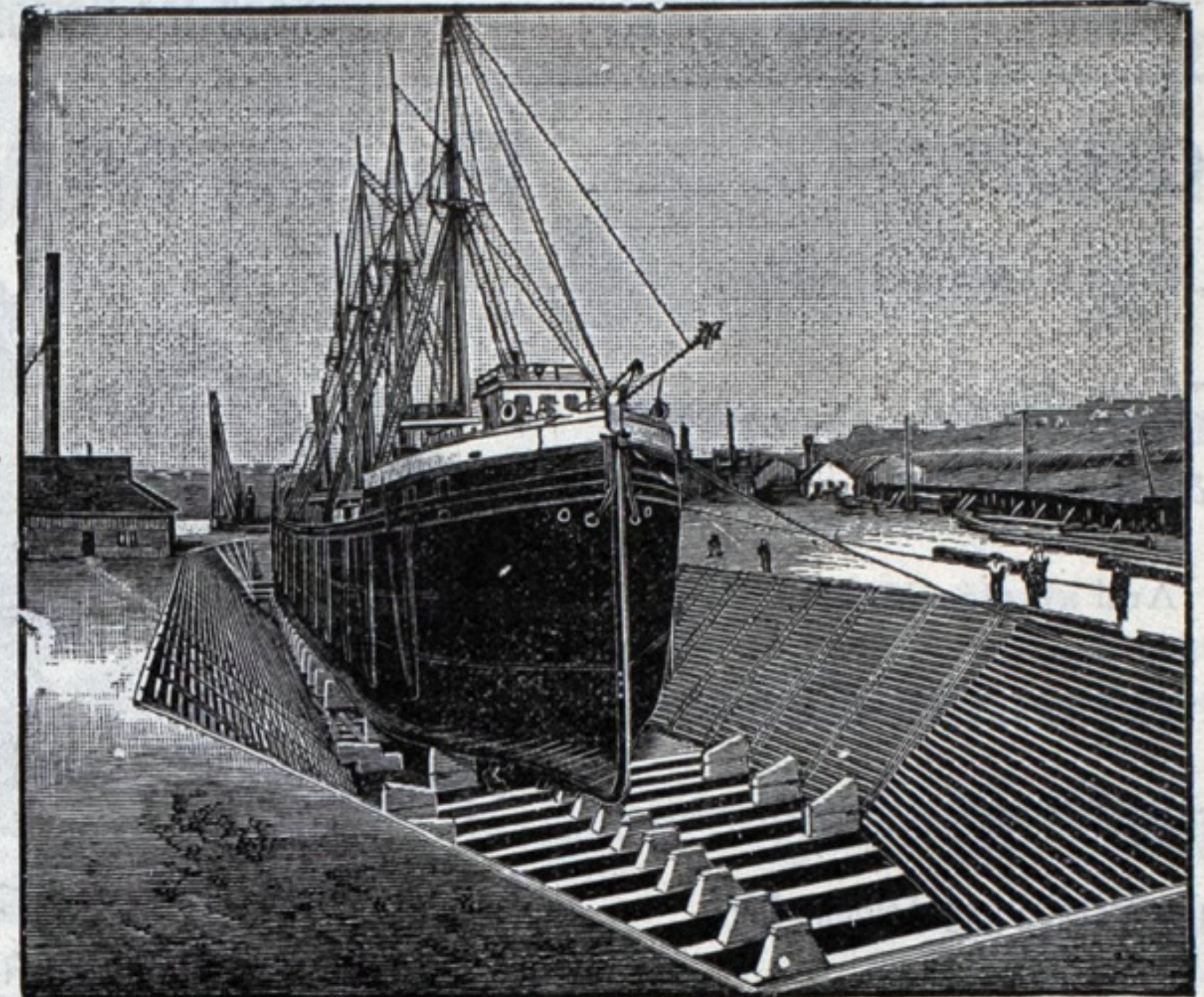
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